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ADDRESS.

THE MEDICAL NEEDS OF SYRIA.

An address delivered before the graduating class of the Marion Sims College of Medicine, St. Louis, Mo. April 10, 1897.

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The attention of the civilized world has lately been awakened to a certain corner of it where crime and massacre have become rife, and where fanaticism and tyranny have been maturing their most horrible results. Information about the lands in which these scenes have been, and are being enacted, and about the nations that are groaning under the iron hand of the unspeakable Turk, now assumes a new aspect of interest to all, especially to the sympathetic hearts of the American people. To physicians and all others interested in their noble profession, all that pertains to the medical conditions and needs of these countries will be among the first topics of interest. It shall be my effort tonight to present before you the medical needs of Syria, my native country, which, though not undergoing the same convulsions that are now tearing up other sections of the Ottoman Empire, may yet be taken as a fair representative of the rest, inasmuch as the same general conditions prevail in it as in the others, and as it breathes the same religious and political atmosphere.

But allow me to say at the start that I shall not be able to present the subject before you from a professional point of view. I can bring no resources of medical knowledge to bear, for I have none. And when in my country I never tried to make a particular study of its medical conditions. Nevertheless, there are certain phases of its medical needs that do not require a specialist to discover. And I shall attempt to exhibit them in a popular, rather than a techinical way—to give the facts as they are suggested to my mind.

And first of all a few words about the climatic conditions of Syria may be appropriate. There are certain peculiarities of the Syrian climate which may have a tendency to help the rise and spread of disease. One is the continued drought of the summer season. For over four or five months, no rain falls at all. The soil becomes parched up and in frequently beaten places it is pulverized into dust, the particles of which flying about in the air, enter the system in various ways, sometimes carrying with them organic germs, and they give rise to several diseases. Then in some localities, especially in low lands, the heat of the summer is intense, and favors those diseases that are fostered by a hot climate. A very few localities besides are marshy, and hence malarial. But these are all the natural disadvantages, as far as I know, from which Syria suffers. In all other respects, its climatic conditions are favorable. The climate is mild and even. There are not those sudden changes in the temperature which prevail in large portions of this country. Our climate, like our music, is rather monotonous, and indeed the balmy breezes of the Mediterranean sea which sweep along the slopes of the Lebanons, and the thousands of clear, crystal springs that gush forth from the mountain side, and the numberless delights that reside in its glens and valleys, render that region one of the garden spots and health resorts of the world. And as far as the climate is concerned, there is no reason why the people of Syria should die of any other complaint than accident or old age. But the fault is not with the climate or the country, but with the people. If the people of Syria undergo any physical suffering (and they do) it is because they violate nature's laws and the violation carries along with it the penalty.

One of the agencies that militate against them in this respect is the comparative ignorance that prevails as to the plainest facts about medicine. Of course, all the people of a country, however highly civilized it may be, are not expected to have a comprehensive knowledge of medicine. But there are certain rudimentary facts that ought to be the common possession of all, not professionals only, in order to ward off all avoidable suffering, and in this respect the people of Syria are deficient. There is considerable ignorance about the constitution of the human body; and as to the nature of disease, some very curious notions prevail. For example, a variety of ailments are classified as "winds." The felon is called the "thorny wind." Cholera "yellow wind." And there are also winds of the side and of the hip, and of the chest, etc., so that you might imagine that every man was a new edition of Æolus, except that the winds are not under his control.

The laws of health are very little known, at any rate very little observed. Negligence of personal habits as to cleanliness is very common among the poorer classes, especially among the Mohammedans. Mohammedanism does not often go hand in hand with cleanliness. And if the Arabic proverb is true that "Cleanliness is of faith" (or religion) then Mohammedanism has very little of either. At any rate, it is one of the most productive causes of disease. It might sound rather strange to say that a people's religion could injure their health. But this is true at least in the case of Mohammedanism. It is an unhealthy religion. A brief consideration of some of its underlying principles and the practices of its adherents, will be sufficient to show that the above statement is not fanciful.

Fatalism enters the warp and woof not only of the Mohammedan's theology but of his every day life and practice. He has very little use for physicians, for no physician can alter the predetermined course of events and the fate of the patient; and he deems it entirely unnecessary to take any precautions against disease, even when an epidemic is ravaging the country. The

more intelligent classes of Mohammedans, however, have outgrown this belief in practice, if not yet in theory. They do summon medical aid to the bedside of their sick. But the common run of them are still wedded to their old belief, and act accordingly.

Polygamy also has its by no means small share to contribute to the unhealthy influence of Mohammedanism. In addition to the awful degradation of morals, it has a very derogatory influence on the physical constitution of parents and offspring. Moreover, it creates peculiar domestic circumstances that tend to the neglect of the proper nursing of children. The several wives of the same man are often too busy with their own rivalries and jealousies to attend to such trifling things as children. The children are allowed just to grow as best they can, without any attention being paid to their moral or physical welfare. And their propensities to filthiness in both respects are given free scope, so that a certain degree of squalor becomes a necessary adjunct of a Mohammedan community. This, in conjunction with other causes, manifests itself in a variety of diseases, among which those of the eye are most common: Strabismus, cataract and myopia are prevalent. And the number of blind men parading at the head of funeral processions, or hanging around about mosques and other public places, is remarkable. Any number of cases of myopia can be seen, some of them very extreme, indeed. I heard of a Mohammedan who was once asked to sign a document. Taking the pen, he raised the paper close to his eyes, and traced the signature. But on returning the paper, the signature was not there. It was found on his fleshy nose.

To do justice to Mohammedanism, however, one favorable fact about it must be mentioned. And that is that it enjoins upon its followers total abstinence from all intoxicating drinks. The Mohammedans, with rare exceptions, observe this injunction, to the shame, I am grieved to say, of their Christian neighbors. And by the way, the drink demon is becoming more and more serious. For formerly though almost all the Christian element of the population drank wine and *raki*, they did it in moderation and there were very few drunkards. But now the number of drunkards is awfully increasing and deaths from the effects of liquor are becoming more numerous.

A great deal of superstition prevails among the ignorant classes of the country. Mohammedans, as well as others, and many of these superstitions that bear on medical subjects are interesting on account of their oddity. A great number of diseases are attributed to the *evil-eye*, or some other magical influence. It is believed that certain people have a peculiarly harmful power residing in their eyes, and whenever they look with covetousness or evil will upon any object it is brought under an evil influence. A material object becomes liable to breakage or loss; a plant, to decay; an animal, to disease and death; and the danger is dreaded no less against man than against any other being. Babies especially are exposed to the evil-eye. A mother who has a healthy baby or one particularly pretty or 'cute (and you know *all* mothers have such babies) is greatly apprehensive for its welfare and takes active measures to shield it from all harm. She resorts to charms of many descriptions. Eggshells, blue beads and bones are regarded very efficient, and a triangular scrap of leather inclosing a scroll with some talismanic inscription is irresistible. In this country physicians try to heal diseases by *pre*scriptions, there they seem to do it by *in*scriptions. Another remedy that is helpful not only in cases of evil-eye but really in all diseases, is the following: Write a few verses of the Koran on a slip of paper, boil in water and administer internally or externally or both ways, and cure will follow, God permitting. This is of avail only in case of Mohammedans. For a Christian, verses from the Bible must be substituted. Sometimes a child of a weak constitution is made to wear a piece of the bone of a tiger or some other ferocious animal suspended on its neck. The idea being that since the beast is strong, and the bone the strongest part of the body, therefore it will communicate this strength to the wearer. A very bright idea, indeed!

But though the Syrian mother's love to her child be very tender, and her solicitude for its welfare very intense, yet there are certain of her practices as to child care that do not seem to me to be very apt to promote the child's robustness. The infant is cramped tight in its cradle and tied up in its swaddling clothes. The tighter the baby is swaddled the stouter it is believed to become when full grown. This practice seems to me to have a tendency to retard the child's development and to injure its vascular and respiratory systems by decreasing the capacity of its chest and hindering the free circulation of blood.

In addition to the above, natural prejudices and stereotyped systems of social habits play their part against the sanitary welfare of Syria. Among the Mohammedans, as you know, women are entirely excluded from all association with men. They are not allowed to show their faces, even to the nearest male relatives. The higher they are in the social scale the more strictly is this seclusion observed. So that even when the negative obstacle of fatalism does not stand in the way to prevent calling medical aid, this powerful prejudice comes up and makes it next to impossible for a male physician to examine the condition of a female patient. He has to form his diagnosis from the description of the father or husband. Sometimes, indeed, in very urgent cases, the hand of the patient may be stretched from behind a screen, allowing the pulse to be felt. But to see the face or tongue—never!

The first need of Syria, then, is to all that tends to break up these adamantine walls of prejudice and custom, and to dissipate these clouds of ignorance and superstition. We need general enlightenment among the people and a fair acquaintance with the primitive facts of the science of health. And we need all the agencies by which this can be carried on. We need to have instruction about physiology and hygiene introduced into our schools, and we need the *schools* in which to carry on the instruction. We need popular papers and magazines that make common the knowledge of the plain facts of medicine, and we need to have the majority of the people so educated that they can read them. Above all, we need to get rid of Mohammedanism and its superstitions and to have Christianity with its purity and enlightenment to raise the morals of the people not only, but also to to promote thereby their physical and intellectual condition.

Another phase of Syria's need is to sanitary institutions of all kinds. Hospitals are badly needed. Though a few such cities as Beirût, Jerusalem and Damascus have their hospitals, yet the larger number of cities from twenty to eighty thousand people have

no such institutions. And indeed in that country, there should be a greater need of hospitals than in this. For owing to the ignorance among the masses of the people as to the proper ways of treatment and nursing, and owing to the lack of conveniences at their homes, it becomes very urgent that all cases of any degree of seriousness be brought not merely for treatment, but even for nursing, into suitable quarters and under competent medical supervision.

Then there are no insane asylums in Syria. The demented are allowed to go at large, wandering along the streets, sometimes objects to the jeers and practical jokes of heartless fellows, who lack but very little themselves of being in their places, and often presenting sights that are shocking to all sense of decency. Violent cases, however, or raving maniacs who are supposed to be dangerous are shut up, bound in chains and fetters and cast in some dungeon or cell where the harsh treatment brings to a speedy end their wretched existence.

Herein also Mohammedanism has its part to play. The Mohammedans believe that insanity is a species of inspiration. Insane people are peculiarly blessed from above. They are *ualis* or saints, and great respect is paid to them. Indeed this belief sometimes leads to practices extremely immoral.

When I said that there were no insane asylums in Syria I ought, perhaps, to have made *one* exception. For there is one such place known as the Monastery of St. Qurhayyah. It is a gloomy cave in one of the fastnesses of Mt. Lebanon, presided over by a number of monks, whose business it is to heal the insane people that are brought under their care. The cure is effected by frequent floggings and exorcism, which are supposed to drive the evil spirit out of the sufferers, for, contrary to the Mohammedans, they believe that insanity is possession by the devil. But to one witnessing their ways of treatment, the evil spirit would seem to reside in the monks rather than in their patients. At any rate, they often succeed, and oftener they succeed too much. They drive not only the *evil* spirit but even the very *life* spirit out of their patients.

Now Syria needs a few asylums conducted after modern plans and in the light of modern science in order to take care of these miserable wrecks of humanity, to restore to sanity those in whom there is any hope of recovery, and to provide a habitation for those that are hopeless.

Again, sanitary precautions of all sorts are needed in our cities. No good systems of sewerage or drainage exist. Even in Beirût, the most progressive of all Syrian cities, no satisfactory system is in operation. And in many of its streets the stench is unbearable and proves to be a prolific cause of disease. Then the cities are very crowded, the streets are narrow, sometimes not more that 8 or 10 feet wide, and sometimes they are arched over, or rooms are built across, so that the wholesome rays of the sun can rarely find an entrance into the houses. As to ventilation, it becomes out of the question. People here talk about the tenement districts of New York. I have seen some of them; they are bad indeed, but they do not compare with some portions of Beirût that I have seen, and still less with portions that I have not seen.

These are some of Syria's medical needs, but her greatest is to *medical men.* I do not mean merely to numbers. For though there is by no means the same proportion of physicians to population as in this country or Europe, and though in larger parts of the country no medical help at all can be secured within many miles, yet the need is not of *so many more* but of *so much abler* physicians. Up to about twenty-odd years ago we had scarcely any men of ability in the medical profession. The land was under the sway of quacks, whose knowledge, when they had any at all, was limited to a partial acquaintance with Avicenna or Galen or some other old-fashioned writer, and to the old and even then out-of-date notions about medicine. They knew nothing about anatomy and their system of practice was based on speculation and theory rather than scientific fact and investigation. The way in which they acquired their education was peculiar. A few months' attendance on, or, it may be, acquaintance with, a physician was thought sufficient. Among the papers of my father I once fell upon the copy of an official report which he had presented to the governor of the district in which he held office after having made a tour of inspection concerning practicing physicians, their diplomas, qualifications, etc. In one of the villages of Mt. Lebanon a man was found practicing medicine and selling his drugs. Asked where he had received his education, he replied that he had accompanied Dr. Somebody for two years in the capacity of a groom, and now he started practice on his own hook, seemingly getting the profession by contagion. Another man seems to have got it by heredity, for he said that his uncle had been a physician before him, and that was the reason *he* was one also.

With such thorough courses of training, we might reasonably expect a proportionately scientific mode of treatment. Cupping, bleeding and cauterization were frequently resorted to. Herbs, more or less indifferent, and concoctions therefrom were administered in liberal doses, and if the patient survived it all it was not the physician's fault.

But the reign of ignorant quackery in Syria is now practically at an end. Among the very few wise things that the Turkish government has done have been the strict regulations as to licensing only physicians who bear the diplomas of a well-reputed medical college, and who stand a satisfactory examination before the Imperial Medical Board at Constantinople. But notwithstanding these restrictions, physicians of high ability are still few and badly needed. Our danger now is not from ignorant quacks but from licensed and so-called educated ones.

Besides thoroughly equipped medical men, Syria needs medical women—lady physicians. The state of society and the prejudices of the people, even among non-Mohammedan sects, being what they are, it is necessary that women be treated by physicians of their own sex. This is the only means possible to relieve them from considerable suffering and to save unborn generations a great deal of physical weakness and hereditary tendency to disease.

Thanks to the kind aid of the missionaries, those from this country especially, this, as well as other needs of Syria, have begun to be supplied. Indeed, our country is under unbounded obligation to the United States, not only for the greater part of the modern social, intellectual and religious development, but also for meeting the physical needs of the people. It is indeed a complete charity that seeks to compass *all* the needs of its objects. This is the genius of Christianity and missions are its manifestation. The American Mission in Syria now maintains the only

lady medical missionary actively engaged in her work. The American missionaries have given us the *first*, and for many years the *only*, medical college. From within the walls of that institution about two hundred men have gone forth fully equipped to practice the healing art, and are now scattered all over Syria, Egypt and other countries in the Levant.

In this connection allow me to address a few words to you, gentlemen of the graduating class, not by way of advice but as an appeal. You are now going forth to give to the world the fruit of your preparation in one of the first institutions of the land; you have had the rare fortune of being trained under professors of the highest ability and of national and international reputation. You have entered upon the fruits of the labors of centuries of progress in your profession, and now you bear in your hands one of the most beneficial boons that has been allotted to men. What use will you make of this power? Shall it be only as a money-making scheme, to take advantage of men's necessity and make it contribute to your financial interest? Nay! but let me repeat to you what I am sure your worthy professors have enjoined upon you once and again: *Do not degrade your profession to the level of a trade.* It is true that every profession must provide an ample support to those that practice it, and that in proportion to their ability; but this should not be the sole end. It should rather be the means to the greater and nobler ends, the advancement of the profession and the welfare of humanity.

The strides that have been made by the medical science in all its branches during the last fifty years are marvelous, but, as you all know, the possibilities have not yet been exhausted. The doors are still open for you to study, to investigate, to discover, to apply. For it is to your country that the world looks up for leaders in this as well as in other lines. *Be among these leaders.*

And then there is another aim that might well claim a place in your hearts. If one of the ends before you in your professional life is to promote the welfare of your fellowmen, one of the best means in which this can be done is through medical missions, one of the grandest philanthropies of the present century, and destined to hold a still more prominent place in the century to come. There are many lands not as highly favored as your own, in which teeming millions of humanity suffer and die in ignorance and misery, and it is within the power of medical science to reach them and alleviate their suffering.

But then there is a higher and still nobler mission that the physician can perform. It is not only to relieve physical pain, but by so doing to reach the hearts of the sufferers with cheer and consolation, to administer to them with the *physical* the *spiritual* remedy.

I have one more word to say. It is to discharge the pleasant duty of expressing in my own behalf and in the behalf of my own country, the warmest gratefulness to the esteemed professors of this institution. Gentlemen, tonight you have added an important item to the indebtedness of my country to yours, by giving us two young physcians, who, inspired by your spirit and electrified by contact with you, shall be bright lights in the medical firmament of Syria. And in the future, if you ever wish to attempt the impossible and trace the wholesome influence that your institution has exerted, be assured that Syria shall not prove herself the least receptive, and from her distant shores there shall be borne across the face of the mighty deep a deeper and mightier gratitude.

ORIGINAL ARTICLES.

FIRST AID IN RAILWAY EMERGENCIES.

Read at the Third Annual Meeting of the American Academy of Railway Surgeons, held at Chicago, Ill., Sept. 24, 1896.

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Introduction.—About 9 o'clock in the evening of the 11th of last August, during a blinding thunderstorm, an express train dashed into a small freight train a short distance outside of the passenger station at Columbus. W. N. S., the fireman of the passenger engine, an unusually vigorous man of 38 years of age, was hurled violently down from the cab to the Scioto River, twenty feet below. So tremendous was the force of his ejection from the engine cab that his body was completely torn from his right foot which had been caught in the wreck, leaving a horribly lacerated stump midway between the ankle and the knee, while the soft parts above the latter joint were also severely injured, rupturing the anastomotica magna and giving rise to a considerable hematoma in the thigh. Throughout the accident, this man retained entire self-possession and when found some time after the disaster, he was engaged in tying a portion of his cotton jacket about the injured limb to check the alarming hemorrhage which was occurring from the wound. Unacquainted with the means of properly tightening his extempore tourniquet, sufficient compression to close the arteries failed to be exerted, and when he arrived at the University Hospital, an hour and a half after the collision, the bleeding from the external wound together with that from the ruptured anastomotica had brought him almost to the point of exsanguination. At the hospital, he was so fortunate as to be admitted to the service of the senior surgeon, my distinguished friend, Dr. R. Harvey Reed—to whose courtesy I am indebted for the privilege of quoting the case—and his colleague Dr. W. U. Cole. The patient's wet clothing was instantly removed, he was wrapped in warmed blankets, hot water bottles were placed about him, and other measures designed to restore the normal temperature and revive the vitality were employed, such as alcoholic stimulants, hypodermics of strychnin and nitroglycerin, and injections of hot saline solution. The hemorrhage was controlled by the elastic ligature, and the limb amputated as quickly as possible at the juncture of the middle and lower thirds of the thigh. Very little anesthetic was needed and very little given. The patient rallied promptly from the anesthesia but, owing to his bloodless condition and the impossibility of correcting it, he gradually became delirious and about an hour before the end experienced a tonic spasm, after which he sank rapidly, expiring about eighteen hours after the accident, a victim of exsanguination.

This accident occurred in the midst of a city of a hundred and fifty thousand inhabitants, containing a hundred and fifty medical practitioners, numerous hospitals, and two medical colleges. There were a dozen physician's offices within five minutes walk of the locality of the disaster, not to speak of numerous telephones by means of which dozens more might

have been quickly summoned to his relief. But he bled to death! Here was a man of mature age and well-regulated mind who, notwithstanding his frightful injuries, was in full possession of all his faculties and anxious to apply for himself the treatment which would stay the approach of the king of terrors. Had he been instructed in the simplest elements of first aid, the application of the simplest form of improvised tourniquet, W. N. S. might today have been about the streets of Columbus with a healthy amputation stump upon which a suitable artificial limb could readily be worn, and the statistics of the skilful surgeon, who attended him, might have been increased by one more success in addition to the large number already enumerated in his case-books.

Railway mortality.—The average number of persons injured yearly in railway accidents during the seven years from 1888 to 1894 was 38,500, of which number 6,500 were killed, and in the year of the Columbian exhibition there were 47,000 casualties of which 7,000 were fatal. For the treatment of these cases numerous magnificent surgical systems have been devised. The surgical staff of so many of our railroads at the present day is so highly organized that to mention one would be an invidious distinction. The statistics of injuries accentuate the need for such organization and it is to the credit of humanity that so many railways have provided for it.

The field for first aid.—There is a period, however, for which most roads have as yet made no provision—the period between the occurrence of the accident and the arrival of the surgeon. The opinion has been advanced that on some roads the stations are so near together and the local surgeons so readily accessible that this period is inappreciable and does not require to be provided for. Esmarch in his Samariterbriefe has well shown the fallacy of the idea that such provision is required only in sparsely peopled localities, reciting an instance of a fire in the city of Berlin where, after an apparently suffocated person had been brought out of a burning house, it was two hours before a physician could be brought to the spot, the life of the victim being saved only because of a knowledge of first aid upon the part of the firemen. And even in our own case of W. N. S., it was an hour and a half from the avulsion of his leg to the application of the elastic tourniquet in the University Hospital, although the accident occurred within touch of the best possible surgical treatment. There is no question but that everywhere on earth emergencies are liable to occur in which life or death may hang upon the presence of a person with a knowledge of the simple elements of first aid, and no where is this more profoundly true than in the emergencies of railway practice, unless perhaps it be on the battlefield.

Existing first aid arrangements.—In order to ascertain what may have been done in this respect in the railway service, in the course of my study upon the present subject, I addressed to the chief surgeons of fifty prominent railways, a letter containing the following questions:

1. Have you any organized system of rendering first aid in illness or injury aside from your medical staff?
2. What, if, any, of the employes of your road are instructed in first aid?
3. What, in a general way, is the character and scope of the instruction?
4. What advantages have been derived from the instruction?

To these letters I received twenty-nine replies.[1] Of this number five replied in the affirmative, six in the affirmative to the extent of a first aid surgical dressing case with printed instructions for the use of its contents, and eighteen replied wholly in the negative. It is a fair presumption that those who did not reply at all, would also have given a negative answer. It is evident then that but little has been done in the organization of first aid in railway emergencies. Indeed, it would seem that even on the roads on which efforts, looking to the first-aid instruction of the non-surgical employes, have been inaugurated, a complete and definite organization has hardly yet been attained.

Advantages of first aid.—The advantage of first aid in those cases in which life may be saved by the prompt application of temporary assistance is evident, but it is no less a fact that it is of proportionate value in less serious cases. The ability to cope with possible injuries inspires men with self-confidence in emergencies. They are not so apt to lose their heads. And yet it can not be denied that even under comparatively favorable circumstances some men will become confused. Instruction in first aid will, however, reduce this to a minimum in accidents.

A knowledge of the subject is valuable, if for no other reason than because it will teach men to avoid improper or dangerous methods of treating emergencies. The use of the tobacco-quid saturated with the indescribable ingredients of the saliva of the habitual tobacco chewer, the cobweb with its collection of filth from all quarters, the sweat-permeated cloth torn from the dirty garment, and perhaps, worst of all, the mucus-laden handkerchief are banished from contact with open wounds. Cleanliness is learned and wounds do not come to the surgeon already infected by filth.

Familiarity with proper methods of handling the injured is of the greatest advantage in four respects: 1. It renders it possible to remove the wounded from wrecks more expeditiously, a feature which may be of vital importance in case, for example, of the not infrequent instance where fire is an accompaniment of an accident. 2. It may be an infinite saving of suffering to the injured. The infliction of pain in moving a patient is an evil so easily corrected that there is but little excuse for not knowing how to do it painlessly. The saving of unnecessary suffering to a patient means diminution of shock and a more favorable condition for the treatment of the surgeon. 3. It prevents the aggravation of injuries so frequently due to improper handling. A wealthy Englishwoman, in alighting from her carriage, slipped and sustained a simple fracture of the leg. The well-meaning and intelligent enough people, who helped her back into her carriage so that she might return home, had not been taught the way to lift and handle the disabled. That her leg was turned in the attempt and the simple fracture was transformed into a compound fracture, was not so much their fault as the fault of the neglect of the proper instruction of the public in such

[1] The gentlemen, who so courteously answered my questions, were: Drs. W. A. Adams, F. W. & D. C. Ry.; F. P. Bancroft, U. P. D. & G. Ry.; C. E. Brayton, N. Y., N. H. & H. Ry.: F. H. Caldwell, Plant System; G. P. Conn, C. & M. Ry.; H. P. Cooper, A. & W. P. Ry.; Walter Courtney, N. P. Ry.; C. M. Daniels, W. N. Y. & P. Ry.; C. M. Drake, Southern Ry.; W. H. Elliott, C. of G. Ry.; W. L. Estes, L. V. Ry.; W. J. Galbraith, U. P. Ry.; A. P. Grinnell, V. C. Ry.; S. S. Halderman, C. P. & V. Ry.; G. H. Hogeboom, A. T. & S. F. Railway.; J. H. Jenne, C. V. Ry.; S. Marks, C. M. & St. P. Ry.; P. H. Millard, C. G. W. Ry.; S. Mitchell, J. T. & K. W. Ry.; R. D. Mussey, C. H. & D. Ry.; J. E. Owens, C. & N. W. Ry.; N. J. Pettijohn, K. C., F. S. & M. Ry.; J. F. Pritchard, M. L. S. & W. Ry.; R. H. Reed, C. S. & H. Ry.; W. B. Rogers, K. C., M. & B. Ry.; Stuart & Boyles, H. & T. C. Ry.; S. S. Thorn, W. & L. E. Ry.; J. F. Valentine, L. I. Ry.; F. B. Tibbals, M. C. Ry.

matters. Were all such cases fully known and recorded, there is not the shadow of a doubt that hundreds of instances of such aggravation of injuries would be found in the history of railway surgery. The prevention of such occurrences may detract a little from the experience of the surgeon, who will certainly receive less credit for the successful treatment of a simple wound than for the cure of a complicated injury, but it will improve his results, simplify his labors, and enable him to accomplish more work in a given time. 4. It is to the pecuniary advantage of the railway company for, (*a*) the fact of thorough preparation having been made for every emergency will give the public increased confidence in the road, which will result in increased patronage, and, (*b*) the diminished severity of injuries due to prompt attention and careful carriage will materially reduce the amount of damages which may have to be paid to the injured.

Hemorrhage is perhaps the complication of railway accidents in which first aid would be more particularly applicable, although it must be admitted that the bleeding is often surprisingly limited, especially in crushed wounds where the lumina of the injured arteries have been occluded by the compression which caused the accident. Nevertheless bleeding may be placed at the head of the list of complications, the failure to immediately correct which, may convert an otherwise curable injury into a fatal one. A Lieutenant-Colonel in the Army, while fighting at the head of his command, was wounded in the thigh by a band of hostile Indians, sustaining a division of the femoral artery. The surgeon was at the rear of the small command and, while a messenger was despatched for him, some of the line officers endeavored to arrest the bleeding as well as they could, but not being expert in the application of improvised tourniquets, they were not successful in entirely checking it. When the surgeon arrived in a few moments, the patient presented all the evidences of fatal hemorrhage, from which he never rallied. That was before the institution of first-aid instruction in the army. Now, every subaltern and a large proportion of the enlisted force would be competent to step in and apply an extempore tourniquet which would amply control such hemorrhage until the arrival of a surgeon, rarely far away in military service.

But hemorrhage is not the only accident in which prompt action may avert impending death. In cases of submersion under water as may occur in case of a fallen bridge, prompt action is notoriously of advantage. In cases of suffocation by smoke or heat, such as may occur in a railway fire, the prompt application of artificial respiration is equally efficacious. The advantage of prompt treatment even of apparently fatal shock is too well known to demand repetition; while the prompt and easily-learned treatment of heat stroke may also mean the difference between death and life.

A little acquaintance with the treatment of foreign body in the eye is apt to be of particular service to a railway man, since this accident is probably more liable to occur in his experience than in that of any other class of individuals.

First aid may be applied with advantage in many other less serious surgical incidents. Not only simple wounds, but bruises and sprains may be prevented by prompt and intelligent treatment from developing into serious and disabling injuries. While fractures can not be permanently treated except by the surgeon, their treatment can be greatly assisted by the exercise of proper measures to prevent the aggravation of the injury and to conduce to the ease of the patient. Burns and scalds, on the contrary, when not severe or extensive, may be sufficiently treated by the first-aid man, while colic and diarrhea may often be controlled by the exhibition of simple remedies.

And, as already suggested, not the least advantage to be derived from instruction in first aid in railway emergencies is the obtaining of organized discipline and intelligent conduct in case of accident. Instead of careering like so many decapitated chickens or crowding about the injured like so many bucolics about a prize beef, the men will naturally fall into places where each one can be of the most service and order will readily be brought out of chaos.

So many, indeed, and so forcible are the arguments in favor of the thorough instruction of railway employes in first aid that the discussion might be prolonged almost indefinitely. But, admitting the desirability of such knowledge, we naturally fall upon the consideration of the questions, as to what men should be instructed, whether all should receive the same amount of instruction, how the instruction should be given, what facts should be taught, and whether men qualified in first aid should be distinguished by a badge to indicate their training.

Who should be qualified to apply first aid.—As employes who are in command of men may not only be required to apply first aid themselves, but to direct others in rendering assistance, such men as conductors, yardmasters, station agents and foremen of shops should particularly be instructed.

All men connected with passenger trains should be qualified, not only from the standpoint of humanity, because of the relief which they may afford to injured passengers, but from the standpoint of the interest of his railway company, since prompt attention to injured passengers may prevent aggravation of injuries and possibly increased claims for damages.

Both of these classes of men should be taught not only the application of first aid, but should be instructed in the organization of first aid parties in extensive accidents and in the best methods of showing others how to apply it.

All other employes should be taught the subject in a less complete manner perhaps, although in view of the changes which transfers and promotions may make, it would be well enough for them all to receive the same amount of training.

Substance of first aid instruction.—Of what then should the instruction consist? In a recent paper on "Methods of Instruction in First Aid," I recommended that the instruction of the enlisted men of the army be given in five lectures, each occupying a full hour; it might be of advantage in railway work to add a sixth lecture. The course thus arranged would be as follows:

1. The Human Body—the skeleton and the circulation in particular.
2. Bandages and Dressings—the triangular bandage in particular.
3. Wounds and Bleeding.
4. Broken Bones.
5. Unconsciousness—suffocation and shock in particular.
6. Other Emergencies—including the use of the emergency box.

It is impracticable, in the limited time at our disposal at present, to specify in detail the facts, methods and theories which should be taught. I have endeavored to do this in my little book on First Aid in Illness and Injury,[2] which may be familiar to some of you. It is worth while, however, to go over briefly the subjects that will naturally segregate themselves into groups suitable for treatment in the several lectures.

1. The lecture on the human body should include a simple description of the body, its chief component parts and the principal vital functions carried on by it; a little knowledge of bones and muscles; something about the nervous and digestive systems; more about the respiratory function and the organs involved in it, and still more about the circulatory system. Experience has led me to consider this introductory lecture as absolutely essential to a proper comprehension of the practical subjects to be taken up later. It is never safe to presume upon the prior existence of any anatomic or physiologic information whatever. Even the most intelligent laymen often display an amount of ignorance that would be laughable if it were not lamentable, and still less acquaintance with the subject must be expected in the less educated.

2. The second lecture, on bandages and dressings, is also foundation work, and its mechanical characteristics ought especially to appeal to the interest of the mechanically inclined railway employe. The triangular bandage, the basis of all surgical first aid, should be taught in all its uses. It is not sufficient simply to talk about it, but it must be shown in actual use. And even that is not enough, for its application can not be satisfactorily understood until every man has himself applied it in all its various modes of employment. The manner of improvising dressings and some suggestions as to the sources from which they may be extemporized is an essential feature of this lecture.

3. The third lecture, on wounds and bleeding, is the natural sequel of the first two—the practical application of the materials learned in the second upon the parts taught in the first. This is really the most important lecture in the course and may often with advantage be expanded into two, treating in some detail of wounds of various kinds, and in particular, crushed and lacerated wounds; reviewing the circulation of the blood and especially the course of the principal arteries, with the location of the most appropriate points for compression in order to control bleeding; the differentiation of the varieties of hemorrhage and the treatment appropriate to each, including the arrest of arterial bleeding by digital pressure and by the tourniquet, will all come within the scope of this lecture.

4. In the fourth lecture, on broken bones, the nature, character and most frequent location of fractures are to be taught, together with their possible effects on the tissues adjacent to this break. The signs of fracture and cautions against unnecessary handling may be followed by a description of the methods of retaining the parts safely and comfortably until proper surgical attendance may be secured. The improvisation of pads, cushions and other supports should also be considered in detail.

5. The fifth lecture, on unconsciousness, is a most important one in connection with railway emergencies, involving, as it does, the treatment of severe shock and collapse, cerebral concussion and compression of the brain, as well as simple fainting. Suffocation in its various forms, including compression of the chest, drowning and inspiration of hot air or smoke, is most important. If inebriation does not often come under the eye of the railroad man, sunstroke certainly may, and convulsions sometimes do. The use of position, hot and cold applications, the administration of stimulants, the employment or avoidance of friction and the application of artificial respiration should all be well understood.

6. The sixth lecture, on other emergencies, may be a collection of the facts not taken up in the others, such as the removal of foreign bodies, the treatment of the effects of heat and cold—burns, scalds and frost bite—cramps and diarrhea, and the like. Here may also be taken up the use of the emergency box and its contents.

In connection with each lecture, some method of transporting the disabled should be taught. This proves an excellent relief to the monotony of a long talk and helps not a little in impressing the facts taught upon the minds of the hearers. Moreover, it is so exceedingly important a feature of first aid work, that advantage should be taken of repeated opportunities to impress its methods upon one's auditors.

Methods of instruction.—With regard to methods of instruction, each lecturer will determine the way in which he can himself best impress his audience. In a paper[3] upon this subject in its military relations, read at the last meeting of the Association of Military Surgeons, I arrived at the following conclusions among others: 1. The best method of instruction is a combination of the lecture, the demonstration and recitation from a text-book, neither of these being sufficient without the accompaniment of the other two. 2. The best instruction is characterized by extreme simplicity of diction and the avoidance of all technicality of language. 3. The best instruction is progressive in character, beginning with anatomy and physiology and advancing to bandages and dressings, and then to emergencies proper. 4. The work is advantageously supplemented by home study of a first-aid text-book.

Excellent charts are available for assisting in the graphic presentation of the subject, and they should be freely used, but nothing can impress men so strongly as a demonstration upon a human subject, and this plan should be utilized whenever practicable. An excellent method in lecturing upon the circulation before male classes is to demonstrate the course of the arteries and veins by red and blue outlines painted upon the skin of a living man. It is not difficult to find men with sufficient enthusiasm to willingly serve in this capacity, and the subject is rewarded for his self-sacrifice by the especially strong impression which the lesson makes upon himself.

Recitations from a text-book, which are used with great advantage in military first-aid work, are not always practicable among the frequently changing forces of railway work, but I can not too strongly urge the great desirability of encouraging the men to the private perusal of a suitable first-aid book. Every station should be provided with one of these—one of the more complete works—and every train should have one in its emergency box. A most useful place for such a work would be in the drawing-room car together with the hotel directory and the railway

[2] "First Aid in Illness and Injury." By James E. Pilcher; fourth edition, 8vo, pp. 322. New York: Charles Scribner's Sons, 1897.

[3] Methods of Instruction in First Aid, New York Medical Record, Sept. 5, 1896.

guide. But, more than that, each employe should be advised and encouraged to provide himself with proper literature upon the subject and, in the light of the lectures and demonstrations of the surgeons, he should study it carefully and conscientiously. This plan is followed with success in numbers of the National Guard organizations, where every member is required to provide himself with a first-aid text-book and to make it the subject of home study. Information received *viva voce*, as in lecturing, is easily forgotten and demands reinforcement by subsequent reading.

The emergency box.—While every man should be taught to extemporize dressings from any available source, it must not be forgotten that better results may be obtained by the use of properly prepared dressings. This is what contributes value to the emergency chest. Every ambulance association has devised one and not a few have been constructed by railway surgeons. I am inclined to think that the chief defect in these chests has been that too much has been left to the judgment of the railway employes. Such a box should not be stocked with a supply of bandages, a package of gauze, some antiseptic tablets and a paper of pins, each article by itself, to be combined as needed for accidents. In order to get at the articles which they need the first-aid men will handle over the lot with their travel-stained hands, until in a short time the entire chest is too filthy to be used. A plan which avoids all this and which also saves the layman the responsibility of grouping the proper articles, is the collection of all dressings into the form of first-aid packets. These packets may well be an extension of the military first-aid dressing packet. The form commonly used in the army was devised by Esmarch of Kiel and contains in a small space: 1, two compresses of sublimated gauze, each wrapped separately in oiled paper; 2, one roller bandage two yards long, of sublimated cambric with safety pin, and 3, an illustrated triangular bandage. One of these packets contains dressings ample for wounds of considerable size, and for very extensive ones two or even three may readily be employed. In addition to wound dressings, the box might with advantage contain a few simple remedies, put up in tablet form when practicable, and with exact dosage; diarrhea tablets, colic tablets, anodyne tablets and, in a bottle of colored glass studded with points to prevent confusion, a number of antiseptic tablets for making solutions for wound cleansing. A bottle of aromatic spirits of ammonia, some packages of bicarbonate of soda for burns, and a few light and small splints might be introduced with advantage; a pair of shears and of dressing forceps should not be omitted and a good first-aid book should always be added. Such an emergency box should form a part of the outfit of every conductor, station agent and foreman, who should be thoroughly instructed in its use and held strictly responsible for its availability and serviceability at all times.

Uniformity in first aid.—The course of instruction given should, as far as possible, be uniform for each road; indeed it would be better still if a uniform plan were adopted for all roads. Men transferred from point to point, or exchanged from road to road would not then be confused by varying instructions and, wherever they might be, they would naturally fall into suitable first-aid positions. Absolute uniformity, of course, would not be sought for—opportunity must be left for the individuality of the teacher—but the desired result would be obtained by the adoption of a uniform syllabus of instruction.

Frequency of instruction.—The course of lectures should be given by each surgeon at least once a year to the men connected with his section of the railroad. On account of the constant change in the *personnel* of the employes, a not inconsiderable proportion of his hearers will be new each year and in any event no one can fail to be benefited by one or two repetitions of such instruction, particularly at annual intervals.

Rewards for proficiency.—The St. John Ambulance Association of England and other societies for the propagation of first aid hold examinations upon the subjects taught in their classes and issue diplomas and medals to those who pass. It is worthy of consideration whether a similar plan might not be of advantage in the railway service. If those men who had been found qualified were decorated with a red cross, to be worn in a conspicuous place, it would render them more easily discernible in case of accident and the possibility of winning the decoration might add a little to the general interest in the subject.

Conclusion.—The results of such organization, if thoroughly applied, will be surprising. In the accident in which W. N. S. made so gallant a fight against impending death, only two other persons were fatally injured. I am not so presumptuous as to assume that the percentage of cases, fatal without first aid, would be present in every railway accident, and assert that one-third of the deaths might be avoided by the proper administration of first aid, but I am prepared to assert, and that with the positiveness bred of actual knowledge, that by the faithful employment of first aid in railway emergencies a distinct improvement in the result of the treatment of railway injuries may be obtained, a material reduction in the mortality of railway accidents may be achieved, and an unspeakable amount of suffering may be saved to the unfortunate victims of future railway disasters. Simple in organization, inexpensive in application, easy in accomplishment, the results will be out of all proportion to the cost. The general adoption of first-aid, then, will not only benefit both the railway service and the traveling public, but it will be a distinct ethical advance introducing into railway work an era of realized responsibility, elevated humanity and genuine altruism.

DISCUSSION.

Dr. HENRY HATCH (Quincy, Ill.)—I was very much pleased with the paper just read and it coincided with my ideas, as I have claimed to be the first surgeon who has put emergency boxes up for a railroad at his own expense. I have devised some emergency boxes of my own which I have in use at the prominent offices in Quincy station; I put up seven of them. In the box I have adhesive plaster, carbonated gauze and absorbent cotton. I have the absorbent cotton put in separate bandages, and the gauze put in a jar, each containing about one-eighth of a yard. The adhesive plaster is put in tin boxes in little coils; in this connection, I have a little stick which I give instructions how to use as a torsion key, and in the cover of the box are printed instructions how to use this material. To the head of every one of the offices where the box is placed, I have taken pains to give special instructions. So far as the boxes are concerned on my part, they are original with me; I never had seen and did not know of any. It has had an excellent moral effect upon the men; while they do not know who put them in, they feel better toward the railroad—the C. B. & Q. They feel as though the railroad company had some heart and is looking to their interest. The C. B. & Q. also has

a relief system, whereby the men are entitled to surgical relief free by paying their monthly stipend to the relief association. While I have not had these boxes in but, I think, five months, it has been a saving to the relief department, because a great many of the smaller accidents have been attended to by the men themselves; and for that reason it would be a financial advantage to all railway companies to have these emergency boxes at every station and at every point in that station where there are liable to be accidents. I have one in the freight house, passenger depot, one in the switch office and round house, where they keep the engines. It is my intention to be at Galesburg soon to see the officials and try to induce them to put boxes along the line. I have sent one to Galesburg and one is up at the master mechanic's office. I am exceedingly pleased with this paper.

Dr. REED—In reference to the paper, which was an admirable one on the subject treated, and which has given us considerable material for thought, I wish to say that when I was appointed surgeon of the Pennsylvania Company some twelve or fourteen years ago, I found on the Pittsburg, Fort Wayne and Chicago Railway some old boxes scatterd here and there, on engines, cabooses, stations and about the road. They were small tin boxes and contained some bandages, cotton I believe, and a few instruments, I do not remember just what they were, perhaps a pair of scissors, something of that kind; very few were complete, and the general superintendent, Mr. Thomas, called my attention to the matter and made the remark that they had been placed on the road years before that and the road was well supplied with them, but owing to the fact that no instructions had been given the men or given those in charge of the men, the boxes had fallen into disuse; when a man would hurt his finger, hand or arm, he would go to the box, pull out a piece of this material and bind up the wound, and close the box; perhaps when something more serious occurred that required the material, it was not there. That was one objection. Another objection was that under these circumstances they did not know how to use it—this was before the days of antiseptic surgery and dressing of an aseptic character—and as there was no one to keep the boxes replenished and no one to report when they were used, the boxes fell into disuse. But notwithstanding that fact, if this matter is taken up properly by the railroads, and proper parties instructed in the use of the material which should be placed and kept in them, I think that something very valuable can be developed out of it. Whether or not we can use all the suggestions made by the writer of the paper in practical work is a question. Those of us who have had some practical experience in this line on railways know that it is quite a task to instruct the employes in many things which we would be obliged to teach if it were carried out in full. For example, I was called on by the superintendent on the Northern Pacific Railroad, who had known me some years ago when he was on the B. & O., and asked to write out a few simple rules which would govern the men in an emergency, and he emphasized the fact that the rules should be so short and simple that they could be either remembered or read in a moment, and he suggested: If you make the rules explicit, if the men do read them they will not remember, and if they want to apply the rules under an emergency they will not take the time to read them. That was the practical difficulty. I also had a letter from a gentleman from one of the roads in California who had written to me, and it was strange that those two men should have written to me on the very same subject. Again, on the Pennsylvania road I was requested by Mr. Thomas to prepare rules, and the same thing occurred again; three practical men wanted rules, but insisted that they should be short and readily applied, without going into details. And the question comes whether or not we would be able to get the employes to read a long list of instructions and be able to retain them so as to apply them. The plan is certainly an admirable one, and contains a great deal that I think we should consider, but I think it will require some practical work to bring it into full development.

Dr. SMITH (Streator)—I have had the pleasure of listening to the very good paper by Dr. Pilcher, also the pleasure of reading his book; I believe it would be beneficial to every chief and local surgeon to get Captain Pilcher's book and read it; I do not know any way that he could employ his time better. He gives some practical ideas and instructions. So far as this box is concerned it is a pretty good thing, but I think very poor without instructions; the first thing you know when a man has an accident he goes and tears off a bandage and puts on a chew of tobacco and lets it go for six or seven days, and then comes to the doctor, and you have a poisoned wound, may be syphilitic, and without instructions I do not believe the box amounts to much. Dr. Wood—I believe he organized the first surgical association on the Wabash—had these boxes, had printed instructions in the lid, and I do not suppose you can find one on the road. The Santa Fe, when they started up, had emergency boxes in every passenger and freight car, and when Dr. ——— took charge of the road I succeeded in getting two of them for Streator. I wish the gentlemen would see Captain Pilcher's book and read it; it is a good one.

Dr. MCCURDY (Pittsburg)—In order that we may have the benefit of all the best knowledge, I think the best thing that can be done by the Association at this time is to see that copies of this paper reach every manager of every road in our country. In that way it will be able to do some good. As railway surgeons we know that everything that Captain Pilcher has said is of great importance and for him to prepare this paper as exhaustively as he has without having that paper reach the roads and bring some practical results would be a great pity; and I move you that this matter be referred to the executive committee with power to take this action.

Motion seconded by Dr. Reed and carried.

Dr. HARNDEN—I have listened to the paper with a great deal of interest. I suppose the author is competent to give a good paper and good advice on this subject, and there is no doubt but what theoretical advice is excellent, and if it could be carried out as he has indicated so ably it would be attended with good results. But in my experience in such matters I have found instructions to employes leave them somewhat in the position of a half-educated doctor—they kill more than they cure. In giving instructions to employes, especially as to the application of ligatures applied with the idea of controlling hemorrhage; I think nine times out of ten the hemorrhage will be increased for the relief is not intelligently applied. A method of teaching employes might be carried out so thoroughly and exhaustively as to render them capable to fulfil these instructions, but unless you append to a law a penalty you will not make it effective, and unless you append to these instructions some requirement under the head of organized relief association, or on the part of the management of the company requiring such employes to show by answers to questions or by oral examination that he has learned those instructions and remembered them and has some idea of carrying them out practically, then the instructions will not have accomplished much. I think about as amusing an instance illustrating the value of such instructions, a man came into my office one day and said a man was injured in the arm and there was considerable hemorrhage attending it; I went to him, and found both limbs above the knees wound tightly with cords, I asked what that was for, and one of the boys said he had heard that if you shut off the arteries in the limbs it would prevent hemorrhage in the rest of the body. That is about the way they would carry out instructions. And the recommendation of this same form was brought before the Erie Railway surgeons and it was discussed and it was decided to

place the matter in the hands of a committee to formulate instructions and recommendations to the manager of the company. The committee reported at the next meeting with a majority and minority report; the minority report was a long detailed list of recommendations and instructions to the employes and the majority report was a very brief one and consisted simply of some of the most simple forms of instructions; in case of hemorrhage elevate the extremities, which, as we all know would in a large majority of cases of ordinary hemorrhage, control it; this was one of the instructions, another was to place a clean towel or other clean bandage of some kind immediately over the wound and apply compression and run for the doctor, and I think that was about the extent of the instructions—they were very simple indeed. They were presented to the company and immediately adopted and circulated and placed in all offices and given to the employes. Now, I think our Fellow, Dr. Estes, chief surgeon of the Lehigh Valley system, by personal supervision of it, has been able to carry out some method of controlling hemorrhage by ligation, by which he has been able to accomplish some wonderful results. And I say Dr. Pilcher's ideas are most admirable if they can be carried out by personal supervision on the part of the head of the management or the relief department.

Dr. GARDNER—I have listened to the paper with a great deal of interest. In our own line [Southern Pacific] we have had boxes some time. The boxes alluded to that we have had on our line (with the exception of the passenger train from San Francisco to New Orleans, the limited, on that a box is placed in the dining car) were ordinarily only a few boxes placed along but they were failures; the contents were mistreated and when they were wanted they were not to be had. The emergency bandage is just the same as the army bandage, but we added the cotton. With that I have printed instructions with every package; these we have placed in the round house, the machine house and every caboose; in every caboose a dozen bandages and printed instructions in every box. We found it was impossible to give instructions to our employes because our road is far west and the employes change often and we do not have the different employes long enough to instruct them; I made an application for a thousand bandages and they were distributed to the different departments and gave great satisfaction; our instructions are simple and very short so anyone can adapt them.

Dr. REED—I beg the pardon of the Academy and ask permission to add one remark I intended to make and forgot. I wish to say Dr. Pilcher's book should be in the hands of every railroad surgeon, but what I intended to convey in my remarks is I think it will do better work in the hands of the surgeon than in the hands of the average employe. The instructions to the average employe should be short and concise, and be backed by intelligent instruction to the average surgeon, who is fully as ignorant as to what should be done in an emergency many times as the average man.

Dr. PILCHER—It has given me very great pleasure to learn from this discussion that the Academy is so nearly unanimously in favor of the extension of first-aid work in the railway service. The remarks, however, of the gentleman who seems to doubt its practicability, remind me of the not entirely unknown anecdote of the peripatetic old chap who was wandering about Southern Europe some four hundred years ago circulating a rumor that the world was round. Nobody believed him. But those of us who visited Chicago three years ago can say most emphatically that he was right. The fact that any particular individual had not seen it to be round did not make the world any less spherical. And the fact that some gentlemen, who have not made the effort, think that first-aid instruction will not be a complete success does not in any way militate against the fact that success in railway first-aid is not only a possibility but and actual living fact. Five roads have already used it to some extent, and the chief surgeon of the Lehigh Valley Railway, Dr. W. L. Estes, writes me that upon his road, first aid has saved no less than seventy-five lives which would otherwise have been lost. These facts alone would seem to amply demonstrate that the doubts expressed by the skeptical gentleman are an unwarranted reflection not only upon the teaching capacity of railway surgeons but upon the intelligence of the vast body of railway men, many of whom are daily entrusted with matters requiring exceptionally keen judgment and comprehension, and all of whom are necessarily above the average grade of intelligence. Neither the public nor the railway service will tolerate such a reflection for a moment. First aid is not a theory nor an untried practice but it is a thoroughly proven instrument, the value of which has been amply demonstrated not only in railway work, but to a far greater extent in military and in civil life. No flag is so much honored today in the civilized world as the white field bearing a red cross, the symbol of aid to the injured and afflicted.

The point that has been suggested with regard to the possible danger of mistaking the inadequate information acquired through first-aid instruction for a complete medical education is a matter that every first-aid instructor should look after himself. In the little book of which some of the gentlemen have spoken so kindly, I have endeavored on nearly every page relating to treatment to call attention to the fact that the aid rendered is only temporary and pending the arrival of a medical man, who should be summoned at the earliest possible moment. I have too much confidence in the ability of our railway surgeons to have any doubt as to whether or not they will impress upon their men the fact that, except in the very simple cases, their assistance should attempt only to tide over the time until a surgeon can be secured. With regard to the emergency box of which so much has been said, I believe it to be an important feature of railway first aid, although it would hardly seem to deserve the prominence which has been thrust upon it in this discussion. The instructions in the emergency box are also important. No emergency box should be without its instructions, clearly printed and conspicuously placed, nor should it be without a copy of a good first aid book, for the further information of its custodian at his leisure, not for hurried consultation in the face of the emergency. You all remember the peculiar cerebral condition which often takes hold of men in emergencies, and manifests itself either in amaurosis or paralysis of the center of comprehension, so that they can not grasp the meaning of any sort of printed matter. But the previous instruction in first aid not only enables men to apply the necessary treatment in the majority of cases without reading the printed rules, but in case they may desire to refresh their memories before applying first aid, it gives them the self-confidence which would enable them to go over the rule intelligently and profitably. But the preliminary teaching is indispensable! It is hardly necessary to repeat what I have already stated in my paper, that an emergency box gotten up after the plan described will do away with the objections already made to these first-aid helps, and the plan of issuing the boxes to certain individuals, who should be held responsible for their serviceability entirely obviates the difficulty arising from their becoming damaged or defective.

Some of the gentlemen have referred to the fact that the introduction of first aid into the railway service will require work. There is no doubt of that, it will require work, both upon the part of the railway surgeons and on the side of the other employes. It will require some expenditure also upon the part of the railway companies, but this will be more than counterbalanced by the amount of expensive litigation that will be avoided. Personally, I have no direct interest in the matter except that of a more or less frequent traveler who may on some occasion be in a position to be greatly helped by first aid. I speak in the interests of the thousands of injured

persons who might every year be helped by the adoption of systematic first aid in railway work. If, as a consequence of the increased confidence of the people, the receipts of the railways are increased I do not object. If, because of the diminished amount of litigation, the expenditures of the railways are diminished I should be pleased. But these are mere trifles, hardly to be mentioned in comparison with the enormous benefit to the great traveling public, which will accrue from the adoption of a system of first aid such as has been urged.

AMPUTATIONS.

Read at the Meeting of the Western Surgical and Gynecological Association, Topeka, Kan., Dec. 29, 1896.

BY J. P. LORD, M.D.

PROFESSOR PRINCIPLES AND PRACTICE OF SURGERY, CREIGHTON MEDICAL COLLEGE; ATTENDING SURGEON TO ST. JOSEPH'S HOSPITAL.

OMAHA, NEB.

The reasons for presenting a paper upon this particular subject are, that the writer has had a considerable experience and observation in this line of work. It is a subject which has received little attention during the period represented by the age of this society, the profession having been fully occupied, studying and discussing the newer problems in our science and art, which have brought with them pressing demands for solution. It is only necessary to turn our mental skiascope upon the history of the last decade, in order to fully perceive and appreciate its marvelous achievements in these newer fields.

The development of specialism in surgery, with its perfected technique, has made its influence felt all along the line even to the "saw bones." When low, it may be said that to amputate a limb in a modern manner, that is, ideally, without drainage, and securing primary union, requires as much, and sometimes more, skill and experience than to do a hysterectomy.

Infrequently as some individual members of the profession are called upon to do an amputation, their experience is insufficient to keep them in line with the more advanced practices; therefore, inasmuch as the subject has received little recent attention, its consideration and discussion is thought to be desirable at this time.

The conditions necessitating amputation are so various that fixed rules can not be followed, either in determining the necessity for amputation, or the manner in which the amputation is to be done. With modern methods of wound treatment, there is not the same necessity for early amputation for injury, as formerly; this, in itself, saves many limbs and possibly lives. But when delay is made without the institution of proper methods, there is the same danger that drove our forefathers to immediate amputation and the necessary sacrifice of many limbs or portions of limbs, because the life should not be jeopardized. Crushing injuries and compound fractures represent this class of cases, and their successful treatment requires not only thorough surgical knowledge, but experience. A better understanding of my meaning can be obtained perhaps by the recitation of cases, of which we have, and doubtless all other surgeons have, too great a number, and is another reason why this paper is written.

A packing-house employe had great toe crushed by wheels of street car. His shoe and foot were necessarily very infectious from saturation with animal matter, and had been imperfectly cleansed, closely sutured and dressed with absorbent cotton. Septic lymphangitis and spreading gangrene occurred. Amputation at middle and upper thirds of legs; return in stump; reamputation middle of thigh, general sepsis and death.

Boy of 12 had foot crushed by street cars; no bones broken, soft parts over metatarsus badly injured and skin burst longitudinally on outer and inner borders of foot; wounds tightly closed by suture and small drainage tubes introduced by physicians called in emergency. Dry iodoform gauze and cotton dressing were secured by bandage; the scant discharge dried into dressing, sealing all parts of drainage. Presented third day septic lymphangitis, temperature 104.5, gangrene halfway to the knee, amputation three inches below the knee, flaps too doubtful to suture. Left wound entirely open, iodoform gauze loosely laid over end of stump between cellulo-cutaneous flaps, copious wet hot carbolized dressing applied. Dressed third day, slight loss of margin of anterior flap, trimmed with scissors and edge of posterior flap curetted, closed with silk-worm gut, primary union, but some pus; recovery uneventful.

These cases represent a class very common, a full half dozen of which could be detailed, from a comparatively recent period. This observation I have made: that general practitioners are too prone to make attempts at repair of these injuries, with results that are worse than useless, and often most pernicious, as illustrated in the cases reported. In cases of this character, the wounds should not only be left wide open, but freely enlarged, if necessary, to allow all discharges to find the most ready and free outlet. Not only this, but many free incisions should be made to allow free exit of the stagnated venous blood. In many of these crushed and lacerated wounds, the trouble may not be so much with the lack of arterial supply (though this may be much affected), as of venous return; the engorgement of the veins increasing the swelling, and devitalizing the tissues by the pressure, thus favoring and initiating the pathologic changes which are prone to culminate in a diffuse, acute, septic lymphangitis with accompanying thrombo-phlebitis and possibly gangrene. In addition to this treatment by free incision to guard against strangulation, the very large gauze, hot wet carbolized dressing is used by the author. This proving inadequate, constant irrigation by hot water is resorted to, which treatment has proven of greatest advantage to the writer in several almost hopeless cases of secondary compound fracture, and cases of crush injuries of the extremities.

In those instances where amputation is subsequently demanded, as well as many primary cases, it has been found that much of the limb can often be conserved by leaving the stump unsutured, thus placing no tax or strain upon the flaps of very questionable vitality. This course in secondary amputation admitting of the incision passing through tissues already much inflamed, the subsequent free drainage produced by this open method quickly restoring the waning vitality of the tissues, beside appreciably lessening the risk of amputation during the inflammatory period. In these cases a preference is also made for the wet carbolized dressings, which are always very ample in character, extending well above the affected part.

It has been demonstrated by the writer that the time-honored custom of going sufficiently high in an amputation to get flaps to cover, need not necessarily be followed in all cases, as is illustrated by the following:

Brakeman had right foot crushed by freight-car truck passing across metatarsus. Integument ruptured longitudinally upon inner and outer borders of foot, but the integument was entirely separated from deeper tissues to a point corresponding to the mid-tarsal articulation. The bones of the tarsus were not crushed, but laid bare for fully halfway on their distal ends. The metatarso-phalangeal joints were wholly disorganized and the tendons, both of the dorsal and plantar surfaces, were stripped of all attachments for many inches. As is often the case in railroad injuries, external appearances were no index to the concealed injury to the member. The skin flaps produced by the traumatism were nothing but skin. Even the subcutaneous fat on both dorsum and sole was perfectly removed. Then to get flaps of vitalized tissues, sufficient to cover stump, nothing short of a Pirogoff amputation would have sufficed. And some would have advised nothing short of going to middle third to get a good stump for an artificial member. But here is a man who went to sleep to have his toes amputated. Self-preservation demands that something be done less radical than some of the procedures referred to. It was my opinion that these accidentally made skin flaps would not live, but I felt actuated to give them a chance, and I therefore resolved to do what I termed a cheese-paring operation, and I made a section of the foot at a point where these questionable flaps would partially cover, if they lived. Disarticulation of the first metatarsal bone was made and the heads of the other metatarsals were sawn at this point, for the reason that the sawn surfaces would granulate more readily than an artificial surface. The flaps were not sutured, for their vitality was much in question. Loose gauze was placed across the stump. Generous padding and no pressure by bandage. Dressed on the third day. Flaps almost wholly devitalized, but no line of separation. Line fully formed in one week, and shreds removed only after sloughing began. When this process was complete, no flaps remained for covering the whole end of the stump. It occurred to me to stimulate the growth of a deep bed of granulations upon this surface so favorable for cicatricial tissues, and to eventually cover this surface by skin grafts. Peru balsam and vaselin, in proportion of about one to six or eight, was incorporated in the iodoform gauze and applied with most happy results, and in about two weeks a full third of an inch of firm, fine granulations covered the entire surface, deeply covering the bones, when after simply rubbing the granulations with gauze, Thiersch grafts were made to cover them, and the result was perfect. With an identical case I feel sure that I could save from an inch to an inch and a half more of the foot. This man walks with little imperfection in his gait, notwithstanding the fact that he has not even taken my advice to get a spring steel shank put into the sole of his shoe.

So large a proportion of amputations are necessitated by injury, the effects of the traumatism extending to, or even beyond the point of election or necessity, the tissues and the patient being in an unfavorable condition for the most perfect reaction and local regeneration, but few cases of primary major amputation admit of complete closure of the wound without drainage, though the only two cases in which this was tried were successful, one of which was not dressed until the fourteenth day. These were favorable subjects, and were selected cases, which are seldom seen in the foregoing class; hence, the use of drainage is the rule.

Many cases also, where amputation is done for disease, are unsuitable for an absence of drainage. Suppurative osteomyelitis and tuberculosis furnish examples.

Cases where amputation is made for removal of a deformed or useless limb, or for disease such as sarcoma, and reamputation for neuromata, and painful stump, are of the class permitting the operator to attain to the ideal in this particular field of the surgical art. First of all, the patient is well, being neither depressed by shock, nor vitality lowered from loss of blood. Second, an opportunity for deliberate and perfect attainment of asepsis, both of the patient and surroundings, as in other operations of election; and lastly, time, in which to secure perfect hemostasis and carefully coapt by buried suture the wound surfaces. The various cellulo-cutaneous flap methods, which have been so long popular, are not perfectly adapted to this method; hence the return of the musculo-cutaneous flap, made preferably by cutting from without inward with a small knife, instead of by transfixion, thus dispensing with the formidable catling.

There has been some discussion of late, concerning the advantages of the periosteal flap. That it does favor development of osteophytes, can not be disputed; that it does render the skin more freely movable over the bone, is true, and is a distinct advantage, especially in amputations by the skin-flap methods. When the bone is covered by a quantity of muscle, it is unnecessary in the writer's judgement. The statement made, that the end of the bone is more prone to osteomyelitis and necrosis without the flap, is not concurred in; this condition being induced by prolonged suppuration about the end of the bone; and in the presence of suppuration this apron of periosteum is prone to become devitalized and itself become a source of delay in resolution. I have often thought that the pressure made over the stump by the firm dressing, was sufficient to cut off the circulation in the periosteum, and that the trouble sometimes experienced in the end of the bone covered by granulations, was the direct result of suppuration started and maintained by the sloughing of the periosteal flap. When the periosteal flap is made, care should be exercised not to separate the muscles from it, and it should be so formed and adjusted, as not to favor the irregular development of new bone, when it may become a source of serious inconvenience.

The nerves should be redivided from one to two inches, varying with individual operations, after the limb is severed. When this is done, though the healing of the wound may be somewhat delayed, there is little danger of the growth of neuromata, it being my opinion that their development is due to irritation and inflammation incident to delayed union, when their divided ends are exposed to this influence, together with their subsequent involvement in the resulting dense cicatrix.

In a reamputation at the forearm for neuromata done last year my associate, Dr. Galbraith, after dividing the nerves two inches above the tumors (which were as large as Concord grapes), the ends of the radial and median nerves were united by catgut suture as in nerve suture, the ulnar receiving no such attention. The case was so treated for experimental purposes. Cases of this character showing a good percentage of recurrences, it was thought that this would

favor a more normal regeneration and repair of the divided nerve fibers. (It may be interesting to note that these nerves were from three to four times their normal size.)

It is a matter of common knowledge to those who have made the observation that when a nerve is divided the sheath retracts for a considerable distance, thus exposing the nerve to the irritation incident to the repair instituted for its encapsulation and protection.

Theorizing that this process may have its influence in the production of excessive cellular activity in the part, thus starting this abnormal growth of fibrous tissue upon the nerve ends, it has occurred to us to try, in cases seeming to demand it, the sliding of the sheath a considerable distance up the nerve before the nerve is divided, a procedure readily and quickly done.

To hasten repair of the several nerve ends and limit the tendency to excessive or abnormal regeneration, Professor Senn has recommended that a wedge-shaped piece be resected from the end of the nerve and the surfaces united by fine catgut. This method of dealing with the large nerve trunks is to be commended cause be founded upon scientific principles. Though it may be said that this will not permit of so high a section as when the nerve is simply cut high. It is the opinion of the writer that so-called neuromata will not form when the nerve is divided sufficiently high to remove the nerve end from the influences of prolonged suppuration at or near the wound surface, barring those cases where there would seem to be an inherent tendency to their formation. The writer's observation is, however, that an irritation is necessary to stimulate their growth, as above referred to, or from the involvement of the nerve end in the cicatrix. If our observations are correct these time-taking methods are useless and unnecessary except perhaps in very rare cases. And it will be a question in many cases whether time should be given to their employment. Certainly not in some.

Some cases of reamputation for sensitive or painful stump are unsuccessful for the reason that the condition is due to neuritis, the result of the original traumatism, or from the extension of inflammation from surrounding tissues. If treatment for neuritis is unsuccessful, excision of a portion of the nerves, or reamputation at a point above the disease may be resorted to, though frequently unsuccessful.

To close an amputation wound, without drainage, requires close attention to details; the knife should be keen, doing as little violence to the tissues as possible; tendons as well as nerves cut high; any redundant fat or shreds of tissue trimmed off; vessels ligated somewhat beyond the point of division of the surrounding tissues; for this purpose catgut is usually preferred. Shredded catgut used as an absorbable tamponade, may be used to arrest hemorrhage from the bone. Absolute hemostasis must be secured in every part, and a glazed condition of the wound obtained. This is more readily brought about if no irrigation is used. Its use impairs the regenerative powers of the tissues and should be avoided. If there is any probability of infection being present, needing to be washed away, success can not be expected. Great care should be taken also, that bleeding is not produced by the needle in making the buried suture, because a little bleeding exites more as is known by all abdominal surgeons. The tension of the sutures should be uniform, strangulation within the wound, or in the skin, being inimical to success.

Leaving a depended opening at the angle, as in a Stephen Smith, will sometimes enable the operator to dispense with the tubage drain, and also procure what is practically union throughout.

The dry dressing is to be preferred in these as in all aseptic wounds. The limbs should be properly supported, securing so called physiologic rest, this being favored also by perfect quiet on the part of the patient.

One great disadvantage of the tube is, that it of necessity remains too long. In an aseptic wound, twenty-four to seventy-two hours should be sufficient time for its purpose to be fulfilled. The first dressing usually not being made under a week, and the intervals of dressing being too long to secure its speedy removal, if it be only a portion at a time, infection is apt to occur before the wound is closed, because of the relaxation of precautions or from other causes.

The introduction of drains of iodoformized wick with gauze or silk attached and secured outside the dressing where they can be drawn upon and the drainage removed in twenty-four to forty-eight hours at will without disturbing the dressing, is practiced by some operators with excellent results and should be more generally employed.

The use of from thirty to fifty strands of catgut secured to the periosteum and from there radiating to the surface between buried sutures of the same material or silk has not been tried, for the reason that I look upon it as possessing in a measure the same objection as that possessed by the decalcified bone drain, which introduces into the wound too great an amount of material favorable to bacterial incubation.

According to Kocher, "the simplest and oldest methods have again become frequent. These are the circular incisions." A familiarity with all methods and their modifications will enable the operator to exercise his ingenuity and skill in making the most of individual cases with the varying conditions. With present-day methods less depends upon the method, than when union was commonly by granulation. Cicatrices after union by first intention are much less apt to be troublesome, even though unfavorably located. When complete closure of an amputation wound is made, there are several advantages possessed by the musculo-cutaneous flap method, which permits of the accurate coaptation of muscle to muscle and fascia to fascia. Dead spaces, subject to the accumulation of wound ooze, are eliminated, dependence not being placed on the fit of the dressing as in the skin-flap methods, though their special advantages render them justly popular.

SOME CLINICAL OBSERVATIONS OF MENINGEAL COMPLICATIONS, FOLLOWED BY DEATH AND POSTMORTEM EXAMINATIONS.

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The dura mater, histologically speaking, is composed of two distinct membranes, the external being a dense fibrous membrane lining closely the interior of the calvarium; the inner surface is smooth, lined with epithelium and is a serous membrane. The dura mater is therefore a fibro-serous membrane; exter-

nally fibrous, internally serous. The latter is more intimately connected with the brain structure. In keeping with these anatomic facts each layer is subject to somewhat different pathologic conditions. The inner layer of the dura is far less frequently diseased than the outer; a chronic, simple inflammation of the latter may exist for an indefinite period prior to death.

It is frequently observed, as in case number one, in making autopsies, that it is difficult or impossible to remove the calvarium without considerable force, and often laceration of the dura is the result. In these cases the dura is firmly adherent to the calvarium and if we are careful to examine the latter we will find that it is thick and often heavier than normal, indicating an increase in the osseous structure and the spongy structure, or diploë, mostly disappeared. Dr. Weir Mitchell attributes to this condition the cause of many permanent and obstinate headaches, often overlooked during life.

Case 1.—E. W. E., aged 56. Widower over thirty years. Occupation, agent for a land company in which he held some interest, the duties connected with the same occupying very little of his time. Was refined and an exceptionally well-educated and well-read man. Had been in the past a prominent society man, but during the last ten years, although having the *entrée* into the best society, he refused all invitations and from choice lived in comparative retirement. He had only two or three intimate friends and was considered a "crank," or eccentric by those persons who met him often but did not know him intimately. He lived a solitary, lonely life in his office, to which his bedroom was attached. In business he was considered a man of exceptionally good judgment and acumen. Had always been extremely careful of his health and was fond of talking about his ailments; was also constantly taking medicine for catarrh (nasal), biliousness and nervousness. Was latterly of an extremely morose disposition.

About January 16 last he complained of some pain and slight swelling of left side of face, which he thought due to defective teeth. On the 18th he had a dentist extract the second and third molars of the left upper jaw. The pain and swelling continuing, he consulted a physician two days later, who found some slight swelling in the muscles of the inferior and temporo-maxillary region, hyperesthesia of the skin and sensitiveness of the mucous membrane. Pressure was painful at the points of emergence of the nerve trunks, especially so where the nerve enters the muscles. The ophthalmic division of the fifth nerve was not affected, but in the upper maxillary division the pain was marked along the upper teeth and there were painful spots along the auriculo-temporal nerve, the pain radiating in the region of the ear and along the lower jaw and teeth. He complained of intense pain directly over the temporal bone; mastication and talking were painful. Examination of the mouth and teeth showed nothing abnormal. Temperature was normal as was also the pulse. Bowels constipated. The case was diagnosed as facial neuralgia, and some of the nerve analgesics were prescribed with codein to relieve the pain; aconite ointment externally, and a saline for the bowels. This treatment not relieving the pain, which continued in the same locality, nitroglycerin and gelsemium were tried with little effect; also hot water bottles and other hot and soothing applications. The patient at this time, a week after calling in professional aid, was sitting up during the day in his office, but not going out of the house.

He took very little nourishment, had very little sleep at night, and was extremely nervous and forgetful. He refused to stay in bed during the day, and after going to bed at nine at night, would get up and dress himself in two or three hours and sit up the remainder of the night. Began at this stage to develop symptoms of mental unsoundness; had illusions of hearing and sight, was unable to remember the combination of his safe, which he was anxious to open; could not remember directions for taking medicine, etc. The swelling of the face increased and the intense pain changed from the center of temporal region to the coronoid process. On examination of the ear, the anterior wall of the external auditory meatus was slightly swollen; the handle of the malleus was retracted; the short process very prominent; the drum membrane in consequence was drawn in, the two folds extending from the short process, which are ordinarily seen in chronic middle ear catarrh, were very prominent, and the membrane had lost its luster and presented considerable opacity. On the 30th, or about twelve days after being under medical care, he remained in bed, for the reason that he was unable, through weakness, to dress himself and unfit mentally to be trusted without a nurse. At this time his pulse and temperature were normal and continued so throughout the course of the disease. Bowels and skin normal; urine normal. He took very little nourishment—milk and egg, beef peptonoids and whisky.

Mental disturbance soon became more pronounced; he had illusions and became at times violent, so that it required two male nurses to attend him. Kept constantly trying to put his bed clothes on for socks and trousers and endeavored to get out of doors. One of his illusions was to pick the paper off the wall of the bed room in order to enlarge the room. He also fancied chairs were men and women, and refused food and drink. The swelling of face increased, with local heat and redness, while the pain diminished. The sub-maxillary glands were involved; the center of pain remained over the coronoid process; no fluctuation. Attempts were made to locate the abscess with aspirating needle, but without success. Application of cold to the swelling caused pain, and it was found necessary to give morphia hypodermically to quiet the patient—one-half grain at most, during twenty-four hours. Strichnia was given for the heart. Examination of the ear three or four days after his taking to bed, revealed the anterior wall more swollen, the view of the tympanic membrane leaving only the posterior inferior quadrant to be seen. This, however, did not show that the middle ear was acutely involved, nor did sharp percussion on the mastoid process at any time cause any pain. The mouth, throat and teeth were examined and found normal.

Dr. Conway, the dentist who extracted the teeth, states that Mr. E. had been complaining of pain in the lower jaw for about four years, but that from several examinations he could not make out any trouble.

I was called to see patient, in consultation with Dr. B. D. Harison, on February 5. Upon arrival, the patient was being held in bed by two powerful men, after having what was termed "attacks," in which his strength was very great, and required two of them to control him. His pulse was 84; the first and second sounds of heart could be heard; volume very much decreased and quite rapid in rhythm. Temperature normal. The pupils were equal and responded to light. Patient was asked to protrude tongue, which he did, and no paralysis of the organ was found.

A swelling was noticed on the left side of the face, which extended down over the superior and inferior maxillaries and below, including the sub-maxillary gland; the latter was swollen and enlarged but quite firm and gave rise to considerable pain on pressure. No fluctuation could be found.

Sensation was impaired; in both upper and lower extremities locomotion was very much impaired. The swelling on side of face extended to and narrowed the external auditory canal. Patient's tongue was coated with a yellowish brown fur; odor from breath was very offensive.

His talk was disconnected and he could not converse, but would answer questions after being aroused, though his intellect was very much impaired. He labored under delusions of going to fall or be injured; would not recognize friends or acquaintances unless his attention was particularly called to them. When asked if he knew such a person, who was his friend, he would anwer in the affirmative, when his attention was called to the friend. He died ten hours afterward, the immediate cause being cardiac failure.

Postmortem, eighteen hours after death: Skull cap removed with great difficulty. Dura mater firmly adherent to inner table; dura also somewhat thickened. The sinuses distended with venous blood. Pacchionian depressions well marked on inner table, with corresponding bodies on membrane. Dura mater firmly adherent to pia along longitudinal fissure. An excessive amount of sub-arachnoid fluid; some venous congestion over whole surface. Slight adhesions noticed between pia and brain substance; more pronounced over base. Sections of cerebral tissue presented nothing abnormal, macroscopically; in fact there was no tissue, with exception of dura mater, which did present anything strikingly pathologic to the naked eye.

On the left side of the face and neck there was a large swelling. An incision into the substance disclosed quite a large abscess cavity behind the inner angle and ramus of the inferior maxillary, filled with about four ounces of very fetid pus. The cavity extended up to the external surface and base of skull inside of the styloid process of the temporal bone. The inner surface of the inferior maxillary was denuded at the angle and this extended up the ramus about an inch.

This case is of interest from a surgical as well as pathologic point of view. Pus was suspected, but was not located before death. The mastoid cells were not involved, neither did the pus cavity extend into the antrum of Highmore, as is frequently the case. The roughened condition found along the inner angle of the ramus of the lower jaw, extending upward toward the upper jaw and involving the canals which lead into and are in close proximity to the posterior cerebral lobe, would indicate the serious nature and location of the pus. However, the alveolar abscess was suspected and an examination made *per os*, but it was not detected. As is well known to surgeons, an alveolar abscess may perforate the antrum when attached to an incisor tooth or may open into the nares, or when connected with lateral incisors the abscess may perforate backward between the layer of the palatine process and superior maxilla, or between the periosteum and hard palate, or may also form fistulous openings on the face near the inner canthus or the under side of the malar bone. When connected with a lower incisor they open sometimes in front of the chin, under the margin of the lower jaw. It is also known that pus from an alveolar abscess may pass down the neck, and one case is reported where it found exit below the clavicle, and in another fatal case it reached the arm pit. When the alveolar abscess distends the mucous membrane of the gum or cheek the diagnosis is easily made, and evacuation and incision is the remedy. In this case these conditions were not found, there being no fluctuation, either external or internal. The mental symptoms manifested by the patient, even before going to bed, indicated meningeal complications. The adhesion of the dura mater to the inner layer of the calvarium would indicate that they had been of long standing. There was a history of cephalalgia in his case which might be accounted for by the pathologic condition of the dura. The involvement of the brain and meninges might be attributed to two principal causes: First, the mechanical obstruction caused by the situation of the pent-up pus; second, the meningeal complications caused by sepsis or streptococcus menigitis. Such extensive adhesions as were found in his case indicated a chronic inflammation of long standing. While the cause of death was, no doubt, due to heart failure, the location of the abscess, involving the external carotid and other vessels which supply the brain, no doubt was responsible for the mental symptoms which developed in this case.

Case 2.—Mental disturbance following rheumatism. C. L. was a saloon keeper. He drank heavily and had been for two years afflicted with sub-acute gastritis and frequent insomnia. A few days before his last sickness he went hunting, sleeping nights in a log hut in the vicinity. Having a poor appetite he kept up on whisky. A day or two before my being called he came to town for a fresh supply of liquor. Often, before this time, his only food was malted milk and beef tea.

I was called to see him on November 26. The right shoulder was swollen and very painful; nausea naturally followed. Pulse full 110 and temperature 103 degrees. The following day the symptoms abated. On the third day his left elbow and wrist were badly swollen and painful and at night caused more or less insomnia. He had muttering delirium when he did sleep. On the fourth day his knees became involved, and subcutaneous nodules presented themselves on his thighs and forearms. At this time, also, acute delirium became continuous and the maxillary glands became involved. He lived till December 6, from the 3d to the 6th his condition remaining apparently hopeless. There appeared to be a prostration, almost equivalent to shock, from the disease itself; but one must not lose sight of the fact that he was a sufferer, or victim, of chronic alcoholism, indigestion and insomnia being with him common conditions.

No postmortem was allowed, yet it is altogether probable that, inter-maxillary and sub-basic, there were glandular pressure and confined pus sacs.

In this case pressure at the base of the brain might have caused the mental trouble, and paralysis of phrenic and pneumogastric functions, while the poison of the disease, *per se*, would have been sufficient to paralyze the vital functions.

This case presented many psychologic symptoms in common with the preceding one, and although a postmortem was not held, I am of the opinion that meningeal complications were, no doubt, present, involving the pia and arachnoid, and extending over the cortex and possibly over the base. Sensation was partially lost in this patient, as well as the power of locomotion. In neither of these cases did the temperature run high, and the meningeal symptoms developed so insidiously that they were liable to be overlooked by the general practitioner for pathologic conditions in other parts of the body, which might be responsible for the secondary brain lesions.

Case 3.—Patient was admitted to the Upper Peninsula Hos-

pital for the Insane, July 27, 1896. Male, age 34, married. Occupation, electrician. Family history fair; no insane relatives; quiet habits; very nervous temperament. Patient had had inflammation of the lungs three years previous; there was also history of rheumatism. Assigned cause, overwork and exhaustion. Previous to his admission he seemed influenced by delusions for some little time; was constantly active in the performance of unnecessary labor, generally something that ought not to have been done.

For the first two or three days patient took very little nourishment, and was quite restless and noisy about the halls, talking of his delusions, etc., but would talk rationally if you held him to a subject. He soon developed destructive tendencies and was also homicidal; appropriated any and every weapon he could get his hands on with the express purpose of killing one of the attendants. When questioned about his motives in this regard, he admitted his intentions without any apparent reluctance or feeling in the matter. He became very troublesome on this account, necessitating constant supervision.

The following is a brief account of one of his attempts to injure an attendant: "He rapped on his room door at about two o'clock one morning and stated to the attendant that he wished to go to the closet to get a drink. He had a sheet wrapped around him, apparently for protection, and started for the washroom; when he got as far as the door, he suddenly turned and struck at the attendant with an iron bar, which he had broken from the bed and had concealed under the sheet. The attendant was so close to him, and being on the alert for any emergency, that he easily warded off the blow." Patient admitted that he intended to kill the night attendant. All of these attacks occurred within two weeks of the date of his admission.

He then became very quiet, docile and apparently very much interested in reading and amusements, but still showed an extremely irritable manner, seeming, however, to try to suppress this as much as he could. From the beginning he entertained lofty and extravagant delusions regarding electricity, telephone lines, etc. He was constantly desirous of taking hypnotics, etc., so that he could get some sleep, claiming that since his admission he had slept but a very little, notwithstanding the fact of his apparently resting well every night, according to the night attendant's report.

The pupils of his eyes were constantly dilated, the right larger than the left; there was no variation in this condition all the while he was here. He complained constantly of severe headache. When first admitted, his demands for medicine were allowed to a limited degree, but we soon commenced to give him placebos. The effects of the administration of these seemed to be equal to those of the drugs he had been taking.

After he had been in the hospital about a month his delusions became more and more pronounced and were tinged with ideas of wealth. He commenced to be extremely irritable again, quarreling with patients, refusing to interview his friends, who came to see him often, and was constantly excited. He became more and more noisy and troublesome in talking of his schemes, etc., so much so that it was necessary to keep him away from the other patients on account of his disturbing them and exciting the whole hall. He gradually broke off from his usual habits of attending amusements, etc., and showed no regard for his former associates.

He soon became almost unmanageable; his mental activity became greatly impaired, so that it was impossible for him to talk rationally on any subject; he became very incoherent in his talk. His delusions of wealth, etc., increased, and he also had hallucinations of sight and hearing, as expressed by his actions and talk. On the occasion of this latest disturbed spell he failed quite rapidly physically. He took considerable nourishment, but it did not seem to be assimilated.

It soon became necessary to place the patient in bed on account of his debilitated condition. He was very noisy night and day from this time on until the date of his death. For about one week before his death he did not seem to recognize any one. Unless watched, he would bruise and lacerate his body intentionally, without any apparent sensibility to pain.

For about two weeks before the patient's death the record of temperature, pulse and respiration showed a very slight abnormal element. His temperature at no time (and this was only recorded on one day) was over 100, and was most of the time normal. His pulse during this period ranged from 76 to 96. The respiration was about normal until two days before death, when it reached 24. There is no record of subnormal temperature. Patient died of exhaustion Sept. 30, 1896.

For some time before death there was rigidity and contraction of the muscles of the back of neck, indicating an involvement of the base, or basal meningitis. The headache was a prominent feature in the case; it was continuous and severe. The general surface of the body at times was very sensitive. The tongue was nearly normal at first, but later on became heavily furred. The temperature at no time ran high, neither did the pulse, excepting shortly before death. At first the pupils were contracted, but later dilated and irregular. The knee-jerk was at first very much increased, later diminished. A diagnosis was made of congestion of the brain or membranes, with possibly inflammatory exudate.

Postmortem made eight hours after death: The skull cap was readily removed; no adhesions of the dura to any part of the calvarium. The Pacchionian bodies were greatly enlarged and seemingly congested. The dura mater, to the naked eye, presented a normal appearance, but upon removal of the same it was found firmly adherent to the pia mater along the longitudinal fissure. The membrane was injected and hyperemic, the seat of serous exudate, and was slightly clouded. The meshes of the pia arachnoid were found to be infiltrated. The infiltration was not purulent in character, but rather of the nature of serum. These conditions were more noticeable over the cortex, although they seemed to extend to the base, and probably involved intra-cranial portions of the various nerves at this seat.

In making sections with the knife throughout the white matter there could be seen with the naked eye enlarged capillaries, and what appeared to be small clots were visible, and under the microscope marked congestion was found, and what appeared to the naked eye to be clots were found to be blood corpuscles which had found their way to the outside of vessels, and which represented a condition termed by pathologists "vena vasculosa."

The postmortem in this very interesting case confirmed the diagnosis made antemortem. The patient's insanity was, no doubt, caused by an increased circulation in the brain structure. The equilibrium of the vascular system in the nerve centers was not properly maintained, which resulted in serous exudate and adhesion of meningeal membrane, which extended over the cortex and base and caused death.

THE CHEMISTRY OF THE URINE IN DIABETES MELLITUS.

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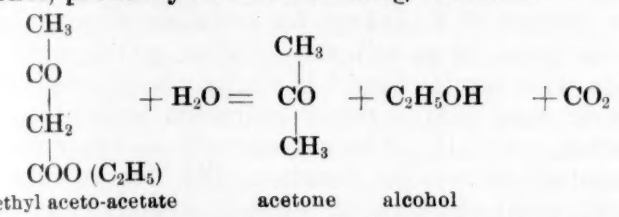
The following article is the result of almost daily analysis of the urine in a typical case of diabetes mellitus, extending from the recognition of the disease to the death of the patient, a matter of eight months. On account of the confusion existing in the literature bearing on this subject it has been deemed best to synthetically prepare several of the abnormal bodies present in the urine of this case for the purpose of an experimental study of their properties.

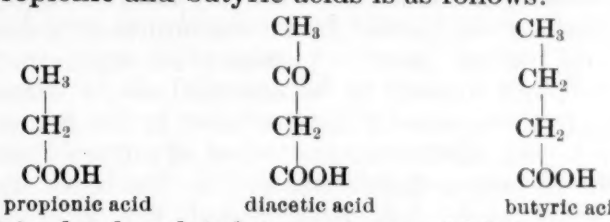
Aceto-acetic acid.—The true history of this body begins with Gerhardt's discovery in 1865 that certain diabetic urines yielded a Bordeaux red on the addition of a solution of ferric chlorid. He did not, however, attribute this reaction to the presence of aceto-acetic acid but believed it to be due to the presence of ethyl aceto-acetate, an allied body responding to this test, since he observed that the distillate of such an urine contained certain quantities of acetone and alcohol, probably in the following reaction:



ethyl aceto-acetate — acetone — alcohol

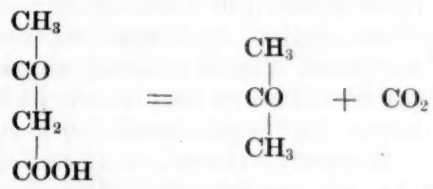
The alcohol present in this distillate, however, was probably a product of the sugar fermentation and its occurrence thus led to an erroneous conclusion. This theory of Gerhardt has not been confirmed by later investigators. Following Gerhardt's discovery, Rupstein, in a series of experiments, claimed to have isolated a substance apparently identical with aceto-acetic acid, which body has since been considered to give the reaction with ferric chlorid in diabetic urine. In 1885, V. Jaksch ("Ueber Acetonurie und Diaceturie." Berlin) made more extended investigations and published his methods and conclusions, bringing out many new facts with regard to the occurrence of aceto-acetic acid and acetone. He also claimed to have isolated this acid in the form of various basic salts, but the analytic results given by these salts did not confirm his claims, as they by no means closely agreed with the theoretic analyses. Although unknown to him, beta-hydroxybutyric acid, a body allied to, and isolated in practically the same way as, aceto-acetic acid, is nearly always present in urines which yield the ferric chlorid reaction. This body unites with cases in much the same proportions as aceto-acetic acid and has nearly the same molecular weight, a difference of only two hydrogen atoms. No method of separating these two bodies in the form of basic salts was as yet discovered and Jaksch's claim as to his isolation of diacetic acid can hardly be admitted.

Concerning the properties of diacetic acid but little is known. According to Ceresole (*Berichte der Deutsch. Chem. Gesellschaft* B. xv. S. 1326) it is a thick, colorless liquid of strong acid reaction and is miscible with water in all proportions. It decomposes easily below 100 C. breaking up in the production of acetone and carbon dioxid. According to Jaksch (loc. cit.) it decomposes in the urine on standing in 12 to 18 hours and a dissociation of its salts takes place on bringing it down to dryness. It dissolves calcium and barium carbonates and if treated with nitrous acid gives carbon dioxid and nitroso-acetone. It never occurs free or in combination in nature except in the urines of patients suffering from diseases involving great tissue waste. It may be artificially prepared according to the method of Ceresole. (loc. cit.) Dissolve 4.5 gm. ethyl aceto-acetate (free from acetic acid) in a solution made by dissolving 2.1 gm. metallic potassium in 80 c. c. of water. Let stand for twenty-four hours and then slightly acidulate with sulphuric acid. It is then shaken with ether several times and this ethereal extract shaken with a fresh mixture of barium carbonate and water. The barium aceto-acetate at once goes into solution, the ethyl aceto-acetate remaining in the ether. This barium salt is very hygroscopic and is not crystalline. It does not give a precipitate with silver nitrate but yields a violet red color on the addition of ferric chlorid. The salt has the same properties. This reaction with ferric chlorid does not take place in the presence of free mineral acids. Aceto-acetic acid is a derivative of the fatty acid series and its relationship to propionic and butyric acids is as follows:

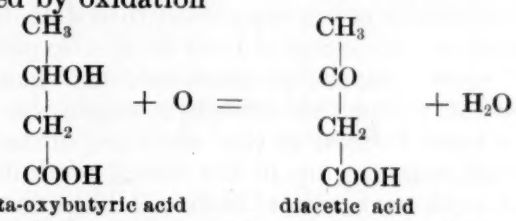


propionic acid — diacetic acid — butyric acid

It is closely related to acetone, which is one of its decomposition products according to the following reaction:

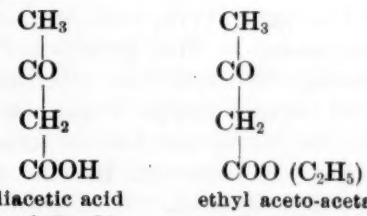


to beta-hydroxybutyric acid, from which it is directly produced by oxidation



beta-oxybutyric acid — diacetic acid

and to ethyl aceto-acetate, its ethyl salt, bearing the same relationship to this body that acetic acid does to acetic ether.



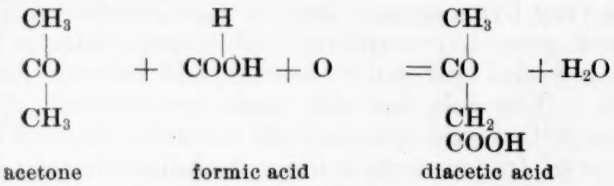
diacetic acid — ethyl aceto-acetate

These several bodies are so intimately related it is evident that no violent chemic action is required to convert one into another, a mere oxidation or the decomposition of an unstable compound being sufficient to effect this change.

It was at first supposed that aceto-acetic acid was produced in some inexplicable way in the oxidation of sugar and several writers, among them Minkowski (*Arch, f. Exp. Path. u. Pharm.*, Bd. 18, S. 41) attempted to demonstrate a relationship between the ferric chlorid reaction and the sugar excretion.

Among other attempts at explanation the following series, which is chemically possible outside the body, was offered by Hugounenq (quoted in *Am. Jour. Med. Sci.*, October, 1887). Starting with glucose, he suggested stages consisting of alcohol, aldehyde, aldol, beta-hydroxybutyric acid, diacetic acid and acetone, the last body being very stable and incapable of further oxidation.

Further investigations showed conclusively that the oxidation of sugar was not the source of this body and V. Jaksch ("Ueber Acetonurie und Diaceturie," Berlin, 1885) advanced the theory that in this oxidation the acetone was directly produced and, if in excessive quantity, united with some fatty acid present in the system, perhaps formic acid, in the production of diacetic acid.



That the source of the diacetic acid is in the sugar is opposed by the fact that not every case of sugar in the urine is accompanied by an acetonuria or a diaceturia, and further that the presence of sugar in the urine does not appear to be essential since diacetic acid has been repeatedly demonstrated in the urines of various fevers, carcinoma and other affections characized by excessive tissue waste. In the case upon which this work has been based the acid first appeared upon placing the patient upon a diet from which all carbohydrates were excluded, at once greatly diminished upon a return to a mixed diet—this diminution being permanent—and was markedly greater after a diet composed almost entirely of meats.

These points would show that the acid is not produced from sugar, but is produced by a splitting up of albumin. Wolpe (*Jahresbericht der Gesammten Medicin*, 1887) believes that the albumin breaks up into a number of bodies, one of which is beta-oxybutyric acid, this acid being converted into diacetic acid by a process of oxidation. This is the explanation which is most generally received. It has been thought by the writer that its origin might be found in leucin, a body formed in the cleavage of the proteid molecule, splitting up in the direct production of oxybutyric acid and other bodies. This theory is favored by the fact that no acid body from which oxybutyric acid can be readily derived has ever been found in urine. The formation of diacetic acid is by the oxidation of the oxybutyric acid, while the diacetic acid itself decomposes in the production of carbon dioxid and acetone. Should the production of the fatty acids exceed certain limits it is possible that the oxidation can no longer be carried on to acetone, with the result that they are excreted in the urine as diacetic or even oxybutyric acid.

Many of the following results are based upon experimental work upon the barium salt, which responds to the various tests for the free acid and is a much more stable and manageable body. It was found to be fairly stable, requiring six minutes of vigorous boiling to produce complete dissociation, while the free acid stood for several weeks in solution and in ethereal extraction without decomposition. On the addition of the barium salt to urine there was an immediate precipitation of the barium with a decomposition of the acid. On evaporation of this salt decomposition occurs. Both the free acid and salt are readily soluble in ether, less so in alcohol and water. It was found to be fairly soluble in acetic ether and amylic alcohol, less so in benzol ether and chloroform. It gives a bordeaux red on the addition of ferric chlorid, yields iodoform by treating with sodium hydrate and Lugol's solution and also with ammonium hydrate and tincture of iodin, the so-called acetone test. The ferric chlorid reaction is therefore a decisive test in diagnosing an acetonuria from a diaceturia. The writer has found that diacetic acid gives the "diazo reaction" of Ehrlich, while acetone, oxybutyric acid and ethyl aceto-acetate do not. This is a ready and reliable test for differentiation. A free mineral acid decomposes diacetic acid, thus destroying the ferric chlorid and "diazo reactions." Ferrous sulphate gives a similar reaction to ferric chlorid with diacetic and is preferable since it can readily be made up in neutral solution. That the reaction with ferric chlorid lost by boiling is due to an actual decomposition rather than volatilization was proved by placing a portion of this acid is a hermetically sealed tube and keeping in steam for half an hour. On cooling and treating with ferric chlorid no reaction could be obtained.

The method of V. Jaksch for isolating diacetic acid from the urine is as follows: "Urine giving a strong reaction with ferric chlorid is slightly acidulated with sulphuric acid and directly extracted several times with ether, until the ethereal extract on evaporation no longer gives a violet reaction with ferric chlorid. These ethereal extracts are shaken with barium carbonate in water, when the acid goes into solution. The ether is then removed and the aqueous solution of barium diacetate filtered clear and evaporated down to dryness in vacuo over sulphuric acid." This method fails if oxybutyric acid is also present in the urine. To eliminate the possibility of the presence of ethyl aceto-acetate in this urine, 63 liters of fresh urine were distilled, it being known that this body split up in the formation of acetone, alcohol and carbon dioxid. A large amount of acetone was present in the distillate but no alcohol. This practically proved the presence of diacetic acid, since there are probably no other bodies which yield acetone on distillation except propyl alcohols, which have never been found in urine. Since all determinations of the diacetic acid by isolation can be by no means quantitative, through the facility with which it decomposes, its comparative insolubility in any extracting body and the synchronous occurrence of oxybutyric acid, no accurate estimations of the quantity of this acid present in the urine have heretofore been possible. The following method, which has been devised during the course of these experiments, can however be recommended as an easy and accurate way of making a quantitative determination. This method is as follows: Make up a solution of barium diacetate and determine its strength by adding to a known quantity an excess of sulphuric acid. The barium sulphate thus formed is precipitated out and weighed, the percentage of barium diacetate in the solution being readily calculated from this. Dilute this solution up to a known amount with water until only a moderate reaction is given on the addition of ferric chlorid. Add 1 c. c. of the urine to be tested to 9 c. c. of water and find out the least quantity of ferric chlorid required to bring out the maximum intensity of the reaction. Now tritrate in 9 c.c. of water a sufficient quantity of

the standard barium diacetate solution so that the reaction produced in each exactly matches in color. From the reading on the burette the proportion of diacetic acid in the urine can be exactly determined. By this method a quantitative estimation of six hours urine, amounting to 3.5 liters, was made. This specimen of urine contained 76.495 gm. of diacetic acid, an enormous quantity which well substantiates the theory that diabetic coma is due to an acid intoxication. In this connection experiment as to the delicacy of the ferric chlorid reaction showed it to occur in the presence of .0000973 per cent. of diacetic acid, while the reaction was strong in the presence of .00038397, as seen in a ten inch column. For clinical purposes, therefore, a urine in which .0005 to .001 per cent. of aceto-acetic acid occurs should be readily recognized. Careful experimental work upon known solutions of diacetic acid have shown that the test based upon the production of iodoform on treating with sodium hydrate and Lugol's solution or with tincture of iodine and ammonium hydrate can not be made quantitative.

Beta-hydroxybutyric acid was first chemically prepared and described by Morkownikoff and Wislicenus ("Watt's Dictionary of Chemistry") about 1870. It is, according to them, a slightly colored, viscid syrup, which shows no tendency to crystallize and readily abstracts moisture from the atmosphere. It volatilizes rather easily in water vapor and at once decomposes on heating to 120 to 130 degrees C., yielding a thickish acid distillate which, on cooling, deposits snow-white crystals having the composition $C_4H_6O_2$, and exhibiting all the properties of crotonic acid. It never occurs in nature except as a constituent of the urine in certain pathologic processes. It is best prepared by treating ethyl aceto-acetate with water and sodium amalgam, when the sodium salt of this acid is at once produced in the following reaction:

$$\begin{array}{l}CH_3\\|\\CO\\|\\CH_2\\|\\COO(C_2H_5)\end{array} + H_2O + Na_2 = \begin{array}{l}CH_3\\|\\CHOH\\|\\CH_2\\|\\COONa\end{array} + NaOH + C_2H_5OH$$

By slightly acidulating with hydrochloric acid, neutralizing with sodium carbonate, evaporating to a syrup, separating out the sodium chlorid formed, extracting with strong alcohol and allowing to cool, the sodium oxybutyrate is obtained. This may be still further purified by repeated alcoholic extractions. By adding sulphuric acid, shaking with ether and pouring off and evaporating this ethereal extract the free acid is obtained. The sodium salt forms anhydrous crusts made up of soft, sharply-pointed crystals, which are soluble in water and alcohol and are very deliquescent. The silver salt separates, on mixing the sodium salt with silver nitrate, in the snow-white capillary and interlaced crystals. The calcium, copper, lead and zinc salts, which are all very soluble and amorphous, are obtained by boiling the acid with the corresponding carbonates. The oxybutyric acid excreted in the urine has the same properties as above and in addition possesses the power of rotating polarized light to the left, the synthetically prepared body being optically inactive. A quantity of the sodium salt was prepared for experimental purposes. This salt was light brown in color and extremely hygroscopic—so much so that it was necessary to expose it to 115 to 120 degrees C. for half an hour and then keep in a dessicator over sulphuric acid. This salt, with the free acid, gave neither the iodoform test nor the reaction with ferric chlorid although it had been claimed by Minkowski (*Zeitschrift für Biologie*, 1887) that it responded to the latter test. Oxybutyric acid and diacetic acid are frequently present in the urine at the same time and while the reaction with ferric chlorid is not a test for the former body its occurrence renders the presence of oxybutyric acid probable. Neither this acid nor its salts give the "diazo reaction" of Ehrlich. Stadelman (*Zeitschrift für Biologie*, 1887), Minkowski (*Zeitschrift für Biologie*, 1887) and Külz (*Arch. für exp. Path. und Pharm.*, 3, XVIII, S. 41) have all formulated methods for isolating oxybutyric acid from the urine as a salt. The method of Minkowski, probably the best and the simplest, is essentially as follows: A large quantity of urine (several liters) is thoroughly fermented and evaporated to a syrup. It is extracted with alcohol, this alcohol distilled off, the residuum dissolved in water and extracted with ether after the addition of a little sulphuric acid. The ether is then evaporated off and the remaining brown syrup treated with concentrated solution of silver nitrate, when the silver salt, in long shining needles, should precipitate out. Various other salts may be made by substituting solutions of the carbonates of these metals for the nitrate of silver solution. By this method, after adding 3 grams of sodium oxybutyrate to 1 liter of normal urine only 1.1286 gram of the same salt could be recovered. Külz's method (*loc. cit.*) of dehydration into alpha-crotonic acid proved to be uniformly successful. This method is as follows: "Take fresh urine which gives the ferric chlorid reaction, ferment thoroughly and precipitate with lead acetate. Filter clear and evaporate the filtrate to syrup. To this syrup add an equal volume of concentrated sulphuric acid and heat in a retort, collecting the distillate in test tubes packed in a freezing mixture. If oxybutyric acid be present in the urine alpha-crotonic acid will distill over and crystallize out in white plates in cooling. It will be recognized by its melting point, odor, etc. He believes that 100 c.c. is a sufficient quantity of urine to employ, but it has been found necessary in these experiments to use a very much larger quantity. This test is based upon the following reaction:

$$\begin{array}{l}CH_3\\|\\CHOH\\|\\CH_2\\|\\COOH\end{array} = \begin{array}{l}CH_3\\|\\CH\\||\\CH\\|\\COOH\end{array} + H_2O$$

This method is by no means quantitative, fully $66\frac{2}{3}$ per cent. of a known quantity of oxybutyric acid being lost in its conversion into crotonic acid. A determination of the amount of oxybutyric acid in the urine can also be made by the polariscope since this body—the product or cell activity—rotates the plane of polarized light to the left, while the artificially made body is optically inactive. This property may be explained by the presence of an asymmetric carbon atom in the composition of this body and has been taken as a test for its presence in the urine by Minkowski (*Zeitschrift für Biologie*, 1887) and Wolpe (*Jahresberichte der Gesammten Medicin*, 1887). They take 100 c.c. of the twenty-four hours urine, remove the albumin and thoroughly ferment. After fermentation is complete, precipitate with lead

acetate and filter clear, examining the filtrate with the polariscope for the acid. It was found that this acid is optically weak and must be present in considerable quantity to answer this test. In the urine of this case the largest amount of this acid found was 4.513 grams in the twenty-four hours' excretion. This is far smaller than the enormous amounts observed by Stadelman (*Deutsche Medicinische Wochenschrift*, Nov. 14, 1889), Kirstein (*Deutsche Medicinische Wochenschrift*, April 11, 1889) and others, where the twenty-four hours excretion ranged from 75 to 90 grams.

While the most reliable means of detection is actual isolation as a basic salt, its occurrence in very small quantities or the presense of other organic bodies may render such isolation difficult or impossible. Dehydration into alpha-crotonic acid furnishes the best clinical method for the detection of oxybutyric acid. Very small amounts of this body are easily recognized by it, the strong pungent odor of even a minute quantity of crotonic acid being unmistakable. An evaporation of an ethereal extract gives the best results in this respect. The use of the polariscope, owing to the weak rotatory power of this acid, is but a rougher test by which additional confirmation of its presence can be obtained.

Ethyl aceto-acetate, it is now believed, never occurs in urine, although early investigation seemed to point to it as the cause of the ferric chlorid reaction. It is a liquid with an agreeable, sweet odor. It is slightly soluble in water, the liquid giving the reaction with ferric chlorid. It boils at 180 C. and is very stable. It behaves like a monobasic acid, which property is probably due to the position of the group CH_2 between two CO groups. It reacts with ferric chlorid and also with tincture of iodin and ammonia and with sodium hydrate and Lugol's solution. The reaction with ferric chlorid remains after boiling, while with diacetic acid this is not the case. Ethyl aceto-acetate does not give the "diazo reaction" of Ehrlich, while diacetic acid does. Its sodium salt can be extracted with ether from an alkalin solution, while diacetic acid can not. These two bodies can never be confounded with ordinary care, although considered as the same by Halliburton ("Chemical Physiology and Pathology") and Talamon (*La Médecine Moderne*, No. 14, 1891).

Alpha-crotonic acid never occurs as a constituent of the urine, but may result from the dehydration of oxybutyric acid. It is a body which on melting crystallizes out in white shining trimetric plates, which are sparingly soluble in cold water but are extremely so in alcohol and ether. These crystals melt at 72 C. and ebullition takes place on rising to 160.5 C. It unites with most metals to form salts which are permanent at ordinary temperatures but which decompose under 100 C. It is very volatile and possesses a powerful, unpleasant odor, which is quite permanent.

Acetone has long been recognized as occurring in certain cases of diabetes, and more recently has been found to be an urine constituent in other diseases also, especially such as are characterized by nervous or cerebral disturbance or are accompanied by high temperature and excessive tissue waste. To it was long attributed the production of various nervous and cerebral symptoms and even coma. Later experiments have shown, however, that this body possesses but slight toxic properties and that it is improbable that its presence could produce such grave symptoms. The true history of acetone begins in 1857, when Petters (*Präger Vierteljahrsschrift*, XV, 6, S. 61), described a fatal case of diabetes in the urine of which he detetected a body which gave the tests for acetone. In 1860, Kraulich (*Präger Vierteljahrsschrift*, XVII, Bd. 3, S. 58) made further investigations and, like Petters, arrived at the conclusion that acetone was formed by an abnormal intestinal decomposition. During the next twenty-five years experimental work on this subject was carried on by Lieben (*Annalen der Chemie und Pharmacie*, Bd. VII, S. 236), Kouska (Diss. Griefswald, 1873), Küssmaul (*Deutsch. Arch. f. klin. Med.*, Bd. XIV, S. 99) and others, but no satisfactory conclusions were reached. In 1885, however, a careful study of its occurrence was made by von Jaksch ("Ueber Acetonurie und Diaceturie," Berlin), who also discovered the presence of diacetic acid in diabetic urines. It was believed by Petters and Kraulich that acetone was formed by an abnormal fermentation in the intestines. Küssmaul, however, showed that this could not be the case. Jaksch and Kobert believed that acetone is never formed in the alcoholic fermentation, but is produced in the lactic acid fermentation. This is not the conclusion arrived at in this article. As has been previously stated, it is believed that an abnormal decomposition of albumin yields oxybutyric acid; this splits up into diacetic acid and this, on further oxidation, gives acetone—a diaceturia or oxybutyruria occurring when the acids produced in this excessive albumin decomposition are present in larger amount than the system is capable of completely oxidizing to acetone. Acetone is a very clear, mobile, colorless fluid which boils at 56.3 C. It possesses a sweet, ethereal odor which is very characteristic. It is chemically prepared by the dry distillation of wood and the acetates, and is also a product of the oxidation of various organic compounds. It is a rather stable body, but under certain conditions may decompose in the production of acetic and formic acids. It yields iodoform on the addition of tincture of iodin and ammonia, and will produce indigo blue in alkaline solution on treatment with ortho-nitro-benzaldehyde. With a solution of sodium nitroprussid and sodium hydrate it turns red, the color soon fading, but reappearing on the addition of acetic acid. It will also dissolve the red oxid of mercury. Jaksch ("Ueber Acetonurie und Diaceturie") believes that acetone is only slightly toxic, but adds that under certain conditions it may produce severe symptoms of poisoning. Lewin ("Toxicologie") calls 5 to 8 gm. per kilo the fatal dose for the dog. He finds that a man may ingest 10 to 20 gm. in the twenty-four hours without producing serious discomfort. In the course of these experiments 10 gm. of acetone each were given to four healthy persons. No subjective symptoms of any sort were induced, nor could tests for acetone be obtained from the urine. There was an acetone odor to breath for twenty-four hours. Doses of 16 grams were administered to two persons without any effects. No acetone could be obtained from the urine. Twenty-five grams were given during two hours without effect. In one instance 36 gm. were given during two hours with the production of slight intoxication and a temporary rise in the pulse rate from 88 to 112. In this case the acetone odor to the breath persisted for forty-eight hours, while a test for this body could be obtained from the distillate of the urine. It is concluded that by itself acetone can be productive of no dangerous or

marked symptoms, but is of importance as showing a pathologic katabolism of the system and as being the forerunner of the much more dangerous diacetic and oxybutyric acids which in a steadily progressive diabetes must ultimately appear. Jaksch ("Ueber Acetonurie und Diaceturie") claimed that acetone was always to be found in normal urine and was consequently a product of normal metabolism. He claimed to have isolated an appreciable quantity by distilling 300 liters of normal urine. On the other hand, Moscatelli (*Archivio per le Scienze Mediche*, Vol. x, p. 231) has been unable to find acetone in healthy urines. He used 25 liters of urine from healthy persons and distilled, saving only the first few cubic centimeters that came over. These were then mixed and redistilled. The first five c.c. which came over were used for testing. By this method no acetone was found, although tests were used which were sensitive to half a milligram of pure acetone. Salkowski (*Jahresbericht der Gesammte Medicin*), has recently shown that any healthy urine distilled with sulphuric acid yields minute quantities of a body which gives all the reactions of acetone. He does not find this body on distilling such urines without the addition of sulphuric acid. In the course of these experiments 50 liters of healthy urine were distilled, without the addition of any acid, without giving the faintest reaction for acetone in the distillate. Acetonuria, in this case, only existed for a few days. Following the institution of an anti-carbohydratic diet, a diaceturia was produced which continued until the death of the patient seven months later. The amount of acetone present was at no time very large, in fact, a large acetonuria will probably never occur, since the system will probably not be able to decompose a large amount of oxybutyric acid in the production of acetone. After the occurrence of the diaceturia several attempts were made to find free acetone in the urine, but without success. This agrees with Jaksch, who never was able to find free acetone in an urine giving the ferric chlorin reaction. It has been claimed by Kallay ("Ueber Diabetes Mellitus"), Talamon (*La Médecine Moderne*, July, 1891), and others, that acetone in the urine is the cause of the ferric chlorid reaction. Acetone, either in the urine or synthetically prepared, gives no reaction with ferric chlorid. It has also been stated by Landois ("Physiologie"), and Kallay (loc. cit.), that the ingestion of acetone causes the presence of albumin in the urine, and that an acetonuria may be responsible for this frequent concomitant of diabetes. In the eight persons who were given acetone in amounts varying from 10 to 36 gm. no albuminuria could be detected, although frequent tests were made. Such an albuminuria is probably due to an over-excitation of the kidneys through the increased amount of work thrown upon them. Should acetone occur in considerable quantity, it will be recognized by its characteristic odor. It was found that 1 per cent. of acetone in a distillate of healthy urine, made with or without the addition of sulphuric acid, was readily perceptible to smell. Since a certain amount of acetone is yielded on distilling an urine containing diacetic acid, all tests for an acetonuria must be applied to fresh urine. It must be emphasized that diacetic acid gives the usual tests for acetone. A diaceturia is therefore to be recognized by the occurrence of either the ferric chlorid or the diazo reactions, since neither of these tests is responded to by acetone. The best method for the recognition of this body is that of Gunning, the production of iodoform in the presence of acetone on the addition of tincture of iodin and ammonium hydrate.

All observers have found the excretion of urea in diabetes to be far above that of health, Cohnheim ("Vorlesungen ueber allgem. Pathologie"), and Strümpell ("Lehrbuch der spec. Path. u. Ther."), reporting cases in which the excretion rose as high as 125 to 150 gm. in the twenty-four hours. This increase may in great part be accounted for by the excessive amount of proteids which form the usual dietetic treatment of diabetes. A more important factor, and one which is but little considered, is the abnormal breaking down of the body tissues, it having been demonstrated that the excretion of urea is far in excess what could possibly be produced from the nitrogenous foods ingested. The urea in this case, on a mixed diet, remained at about three times the normal amount.

It has long been known that the excretion of ammonia in the urine is greatly increased in certain morbid processes, especially diabetes. In 1872 Frerichs noticed that the urine of diabetic patients previous to or during the occurrence of coma contained an extraordinary amount of ammonia. He therefore attributed the production of these cerebral symptoms to the poisonous action of this body, which he believed was produced by the action of an abnormal ferment upon the urea, decomposing it in the production of ammonium carbonate. This idea, as the so-called theory of "ammonemia" at one time gained wide credence, but has more recently been shown to be erroneously grounded. In 1889 Stadelman and Kierstein, working independently, published (*Wochenschrift für Klinische Medicin*) reports of work done on this subject. Starting with the observation that the ingestion of acids increased the ammonia excretion and that they exactly kept pace with one another, the reasoning was extended to those diseases in which there was a noticeable increase in the acid excretion. It was found by them that the quantity of oxybutyric acid excreted in diabetes ran exactly parallel with the excretion of ammonia. The theory of an "acid intoxication" was therefore proposed by them, believing that severe nervous and cerebral symptoms appeared only when the production of acid was excessive, and that coma supervened when the neutralization of these acids could no longer be effected by the quantity of ammonia available in the economy. They therefore recommend the determination of the twenty-four hours ammonia excretion as an easy clinical way of arriving at an approximate idea of the amount of acid excreted. The average ammonia excretion of a healthy individual being about .8 gm., they believe that an ammonia excretion of more than one gram may induce serious symptoms, while a rise to 2, 4 or 6 gm. denotes a dangerous condition and a marked liability to coma. On a diet composed exclusively of proteids the patient upon whom these experiments were based excreted an average of 8.4 gm. per diem. On a mixed diet the ammonia excretion fell over 25 per cent. One sample of urine, passed while the patient was on a rigid meat diet, gave an enormous yield of ammonia, far exceeding the maximum quantities given by Stadelman and Kierstein. This specimen was passed between 9 A.M. and 3 P.M. and amounted to 3.5 liters. In this were found 16.635 gm. of ammonia associated with an excretion of 76.435 gm. of diacetic acid and a total urine acidity of 142.8. This amount of ammonia should theoretically be able to neutralize some 90 gm.

of diacetic acid, and there was evidently an excess beyond what could combine with this body. The probable presence of oxybutyric acid would account for this discrepancy. Unfortunately, the full twenty-four hours' excretion could not be obtained, but had this proportion obtained for the usual urine excretion of ten liters the ammonia would have amounted to 42.32 gm., a quantity capable of neutralizing about 125 gm. of concentrated sulphuric acid.

Frequent determinations of the percentage of urine acidity were made in this case, and all examinations of the twenty-four hours' excretion showed an acidity far above normal. The percentage of acidity was about 25 per cent. less while the patient was on a mixed diet than while there was a rigid exclusion of the carbohydrates. It was also noticed that urine passed several hours after meat meals was much more acid than urine passed fasting or shortly before eating. All determinations of urine acidity should be accompanied by estimations of the ammonia, as according to Stadelman and Kierstein it is probable that the acids do not exist free, but in the form of ammonium salts.

OXYGEN INHALATIONS AND HYPODERMIC MEDICATIONS IN THE LUNG AFFECTIONS OF INFANCY.

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The difficulty encountered in procuring a supply of oxygen in the treatment of pulmonary affections leads me to believe that its efficacy is not appreciated by the profession at large. The text-books of recent date recommend oxygen inhalations in such cases, but in so vague a manner as to leave the average practitioner unwilling to undertake the trouble and expense necessary for its utilization. It is for the purpose of urging upon the more conservative members of the profession the extreme value of these remedial agents that the following case is reported:

I. L., infant daughter of Lieutenant L., aged six weeks, was attacked with broncho-pneumonia, with involvement of large lung area. The severity of the attack may be best expressed by relating that a very distinguished specialist called in consultation on the fourth day of her illness gave the gravest prognosis and recommended euthanasia. Up to this time the treatment consisted of oil-silk cotton-batting jackets, steam and medicated vapor inhalations, ammoniacal and alcoholic stimulation. The condition of the patient was that of marked cyanosis, Cheyne-Stokes respiration, carbon-dioxid narcosis, pulse weak, rapid and irregular. After the grave prognosis of the above-mentioned specialist the writer was left alone with the case. Two suitable rubber bags were procured, and with the means at hand afforded by the laboratory of the post hospital, Jackson Barracks, La., a sufficient quantity of pure oxygen was administered almost continuously to the infant, with the most marked and gratifying results. The previous cyanotic condition gave place to a healthy color, with a disappearance of carbon dioxid narcosis. The respiration became deeper and more regular, the pulse slower and stronger and a general tonic effect was noted. In addition to the oxygen inhalation and *pari passu* with its administration, hypodermic injections of digitalin, strychnin and atropia were employed as often as indicated, with an occassional injection of codein to control excessive coughing.

The method of administration was as follows: One-half a tablet of digitalin 1-100 grs., strychnin 1-60, atropia 1-100 were dissolved in a syringeful (30 m.) of water, 5 minims of which were injected at a dose. By plunging the needle boldly in over the region of the hip the infant will not experience pain, provided the needle is small and sharp.

The writer wishes to call attention to the accuracy of dosage and promptness of effect noticed with this form of therapeutic administration, and especially with these agents and to express his conviction that by these means the mortality of uncomplicated cases of broncho-pneumonia, even in the very young, can be brought very low. By this method the digestive apparatus is not interfered with, a point in connection with regular and sufficient nourishment of the highest import. The writer takes this occasion of urging extreme caution in the use of opiates and to express his preference for codein.

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(*Continued from page 795.*)

CHAPTER V.—SURGICAL INSTRUCTION AND LITERATURE.

Schools of surgery in Germany and Russia; Practical instruction at universities, polyclinic, klinic; Surgical instruction in Paris: Desault, Ecole de Santé, Pensions, visits to Pelletan, French students, Boyer; Surgical instruction in London: John Hunter, Edinburgh; Book-making of German surgeons, servilism, Latin or German; Mutilation of the German language by the French; Translation craze, esteem for foreign countries; Surgical periodicals, reviews; Text-books, prices of books.

With the sharp separation between medicine and surgery in Germany, and the wide gulf which between doctor and barber in respect to scientific acquirements and social position, it could not happen otherwise than that the study of surgery was a very different matter for the physician from what it was for the barber. The universities where the physicians heard surgical lectures, did not exist for the barber; he lacked both the money and the preliminary training of the gymnasium. The state had to provide for its higher education in other ways, since the beginning and the end of the wisdom which the barber apprentice took with him from the home of his master, was the noble art of shaving, bleeding and putting on plasters. With this object in view, special institutions of learning called *Collegia medico-chirurgica*, were founded. In these schools, with which an anatomic amphitheater was connected, various teachers lectured in anatomy, surgery, pathology, materia medica, chemistry, botany, and so forth; also the barbers were examined there, before they were given permission to practice.

One of the oldest institutions was that founded in *Hanover* in 1716, which was under the direction of the physicians-in-ordinary and court physicians. It received as students the journeyman barbers and the apprentices of the city. Upon payment of a certain amount (two thalers from the apprentices), they were given the bodies of criminals to dissect. *Berlin* followed and, according to a plan of Holtzendorff, instituted a collegium medico-chirurgicum, which was an enlargement of the anatomic amphitheater, at that

time the only medical school outside of the universities, in the kingdom of Prussia. This new institution was the first one in Germany which trained surgeons and physicians especially for the military service. King William I. desired to have in his dominions an institution where medicine and especially surgery should be taught just as well as in Paris, London and Amsterdam. In it medico-surgeons and thorough physicians should be trained for the low countries (north Germany), and for the army. At its foundation there were six professors and a "demonstrator of surgical operations," who gave public lectures daily, in the German language, in all branches of therapeutics. Henrici, professor of therapeutics, lectured four times a week on medical and surgical pathology. In the winter Buddeus gave demonstrations in the anatomic amphitheater, and lectured on wounds and operations, on fractures, luxations and mortality of wounds; he also exhibited bone-preparations, and gave instruction in sectional reports. The actual teaching of operations, bandaging, and the use of instruments was entrusted to the regimental surgeon Senff. Of the other professors, Ludolff taught materia medica, in connection with demonstrations in setting bones; Pott, pharmaceutics; Neumann, pharmaceutic chemistry with experiments. Finally, Schütz, in one semester expounded arithmetic, geometry and trigonometry, and in the other conducted practical experiments in the field. Berlin was proud of this school and imagined it was not only just as good as a university, but that it was not behind even the Paris institutions, indeed, that it surpassed them in many good points, because here lectures were held daily, in Paris only during certain months. The joy over its founding inspired one collegian to the following poetic effusion:

"What Leyden, Paris, Basil has rendered great,
Is now with equal skill achieved within our State,
Apollo, to your flock of Muses say, 'tis known
Berlin, through Frederick William, a Paris now is grown."

The hope of connecting a hospital for practical instruction with this school, was realized a few years later in the establishment of the Charité. In 1810 the college was dissolved and replaced by the medical and surgical academy for the army.

In *Dresden*, under August II. in 1748, at the suggestion of Pitschel, afterward surgeon-general, a medical and surgical college was founded. He describes the institution in a little work full of absurdities, and in a disgustingly servile hymn to Frederick August III. As army surgeon in Bohemia, Pitschel had convinced himself of the great irregularities in the Saxon hospital life as well as the gross ignorance of the hospital stewards and field apothecaries, not one of whom even knew oxymel simplex. After peace was restored, and when at the solicitation of several army surgeons, Pitschel gave lectures on diseases of the bone, the council of war commissioned him to outline a plan for a surgical school and to organize it within the barracks. In spite of the commission of the council he had many difficulties to combat. The people who lived rent free in the barracks would not move out; from the timber which had been hauled for the college building, a member of the council of war had himself a barn built, and finally, his colleague, Günther, surgeon-in-ordinary, published as his own the plan borrowed from Pitschel. His Majesty accepted Günther's, but he was publicly blamed by the people. After many trials, the death of the Duke von Weissenfels, who had left a number of anatomic preparations, gave the next impetus to the establishment of a school in which army surgeons as well as civil surgeons should be trained. Hänel taught therapeutics, Pitschel anatomy and Günther surgery. Each infantry regiment must send two, each cavalry regiment one, yearly, to complete the course. They connected with this school the surgical hospital, and in 1784 a lying-in hospital for twelve persons was added. The surgeon officiated at the same time as obstetrician. The Platner instruments and bone-preparations were bought and a library established. In the war for Independence Dresden saw the downfall of her school, but replaced it in 1815 by the surgical and medical academy.

Coeval with the establishment of these institutions, there sprang into existence in other parts of Germany larger or smaller schools with two or three year courses, and thereupon occurred a forward stride, considerable for that time, in the progress of surgery. Unfortunately many of them did little. Indeed, the lectures were not always held regularly. Schools of this kind arose in Frankfort-on-the-Main, Hamburg, Regensburg, Bruchsal, Braunschweig, Celle, Cassel, Gotha, Dillingen and elsewhere. In Heidelberg in 1783, Professor Schwarz founded a surgical institute and diverted the guild funds of that place, which were as a rule spent in feasting, to the creation of a library. At the same time Zürich established, through a society of physicians, a medical and surgical institution with seven teachers. The course was expected to cover three years, and the price for the lectures, excepting anatomy, for this time, was placed at twelve Louis d'or. In Braunschweig the preparatory studies cost three thalers a semester. Only a few schools enjoyed the advantage of hospitals; so the school of the Hofrath Trampel, in Meinburg, and also that in Landshut, where surgical patients were received for a fee of thirty kreuzers a day, were especially recommended. It is only in the present century that institutions for the education of first and second class surgeons have multiplied in Prussia; in Münster 1822, Breslau 1823, Magdeburg 1827, Greifswald 1831. But this growth was arrested in 1849, when the study of surgery was limited to the universities alone. Of the medical and surgical academy in Vienna and of the military medical institute in Berlin we will speak later.

The establishment of the German surgical schools nowhere met with more approval than in *Russia*. Catherine II. called the surgeon Mohrenheim from Vienna to St. Petersburg, as professor, and commissioned him to found such a school there, the first in Russia. A great building near the outlet of the Neva, with forty beds for practical instruction was planned, and in 1783 was dedicated. It was under the immediate protection of the empress. Thirty pensioners were appointed, who devoted themselves to surgery and were given free lodging, an allowance in money, etc. They were for most part Germans, or of German parentage. They received free instruction from seven professors in theoretical and practical medicine, surgery, anatomy, physiology, chemistry, botany, materia medica, pharmacy, obstetrics, ophthalmology, physics, and even in the German language, besides instruction in other languages. The teachers received a salary of 600 rubles each, together with a residence. Mohrenheim, who taught surgery, ophthalmology and obstetrics, performed the more important operations himself, but left the lesser ones to the students. If the pensioners passed the examinations successfully they

served six years in the ambulances, then as staff surgeons and division surgeons. The experiment with the German element turned out so well that a few years later the empress called German physicians and surgeons to Russia in order to appoint them in the provinces and to the surgical school in St. Petersburg. She gave the physicians from 600 to 800 rubles per year, with the rank of major; the surgeons 400 to 600 rubles, with the rank of lieutenant, and secured to them very liberal provisions in regard to pensions and the care of their widows and children. They could choose their own residence in the province. In 1786 eighteen German physicians and six surgeons, whose commissions as court surgeons Zimmermann had issued in Hanover; among others the Braunschweig city surgeon, Knockstedt, who became professor of anatomy. In the course of a year three new schools, with an income of 24,000 rubles, were established by the empress in St. Petersburg, Moscow and Kronstadt. Attached to each of these were fifty students, three teachers in medicine and three teachers for languages and drawing. The assistant surgeon received 150 rubles, each pupil 50 and each professor 1,000.

We will now turn to the *practical instruction in the German universities*. Until the 18th century the seats of learning in Germany had lecture rooms enough, but no patients. Medical instruction was everywhere limited to lectures in therapeutics and the students knew sickness only from their note books (*Medici ex commentariis*). What were the consequences? When the young men left the university, in spite of all their erudition, they could scarcely recognize erysipelas. They followed their text-books mechanically, and when left to themselves it was only with the greatest difficulty that they were able to push forward on practical lines. The university fills the memory and instructs the understanding of only the more capable and industrious few, and the greater number almost suffocate in the tasking of the memory (Baldinger). Even in the 80's the Vienna students must needs be satisfied if they were permitted to read over Van Swieten's Commentaries, since there were not even lectures on pathology. Stoll, the professor of medicine, lectured voluntarily on fever and chronic diseases, but this was only a fragment. In 1795 Professor Frank began daily free lectures on special pathology and therapeutics. Surgery in the universities fared no better. Barren and unfruitful it lay useless and unknown. The faculty took almost no interest in it of their own accord; they looked down on it contemptuously because it was in the hands of the barbers. For a long time it had no professor at all. One teacher expounded Boerhaave's "Aphorisms," another based his lectures on Heister's "Surgery." But because of the lack of hospitals the students saw no patients. This need was somewhat satisfied by the *policlinic* (klinische Institut, ambulirendes Klinicum), with which they were content for a long time. The professors took the students with them to the houses of their private patients, and allowed the poor to be gratuitously treated by the students, under their supervision. From this grew the custom of the younger physicians attaching themselves to those older in practice, in the rôle of assistants. Many civil authorities even required the young doctors to serve for a specified time under the direction of reputable physicians before they gave them permission to treat patients independently. Little came of this. The busy practitioner demanded as much as possible from his assistant, but had no time or inclination to instruct him scientifically. The young colleague was never sent to the sick of the better classes, but if his name came to be often heard he was dismissed and another engaged. Although the policlinics could not take the place of a hospital, they were of great value to the students. We will look more closely at those of Jena. For several years Professor Loder had taken his students to visit private patients. He also treated the poor, whose cure was paid for out of a fund made up by him and his pupils. So there grew up gradually a private policlinic, which was in 1791 given to the public as "Medicinisch-Chirurgische Krankenanstalt," the gift being the result of an annual allowance from the Duke of Saxe-Weimar. In the first years Loder took charge of the medical and surgical practice alone, till in 1793 Hufeland undertook the medical cases; the court surgeon, Günther, was assistant. The institution took care of about 200 patients, the majority of whom received medicine and treatment free. There were also rooms reserved in the lying-in hospital for the special surgical cases. The patients came at a specified hour to the institute, which was open daily; only those who were bedridden were visited by the students. It was their duty to visit the acute cases two or three times a day, the chronic cases once. If a student neglected this duty he forfeited his semi-annual allowance. In important cases Loder and Hufeland accompanied the students. Separated into practitioners and auditors, they kept journals, which were from time to time examined by the professor, and they themselves, under supervision, prepared most of the medicines, in a little laboratory. The policlinic developed in a gratifying way, and in the first three years was attended by fifty-two practitioners and seventy-five auditors, and in the year 1796 treated about five hundred and forty patients. Since the entire cost amounted to 800 thalers, while the Duke gave only 260 thalers, the professors were obliged to renounce their respective fees and even to apply the honoraria of the students to its support. Similar ambulatory clinics existed in many universities; in Göttingen, and Halle, where the clinic was enlarged for surgical cases and endowed with 1,000 thalers, until, in 1806 a hospital was built. Reil had charge of the medical, Meckel the surgical cases.

The center of practical instruction should be in actual *university clinics*, which really only began to develop in the eighteenth century. The impetus to found the first clinic in Europe was given by the German students in Padua in 1578. At their instance it was decided that the two professors, Albertino Bottoni and Marco degli Oddi, who were already physicians in the hospital of St. Francis, should give lectures beside the sick beds, and from time to time open bodies to ascertain the seat of disease. Unfortunately, dissections were soon forbidden. This first clinical instruction, as it appears, did not long continue fruitful, and the clinics established after the manner of this one, in Pavia and Genoa, had no especial consequence. Accordingly they did not approach in merit, as bearing on the general introduction of clinical instruction, the clinics in Utrecht and Leyden; for it was in Holland first that these arose, through the labors of Heurnius, Schrevelius, Kyper, de le Boë Sylvius, and especially through Boerhaave's magnificent results, and thence spread to the universities of all nations. The instruction consisted principally at the bedsides, where the students were entirely passive. Indeed,

Heurnius, who established the first clinic in Holland as collegium medicum practicum at Leyden, and conducted it alternately with Schrevelius, soon came to the conclusion that the students must be induced to do more investigating at the bedside. He brought this about, and required them to make their diagnosis. This method, however, was very distasteful to the students, and Heurnius desisted from it, and thereafter contented himself with his lectures. But this system of examination seems to have been already instituted by Kyper's celebrated successor, Sylvius, and to have been one of the forces which carried the fame of the Leyden clinic over all countries (v. Ziemssen). Boerhaave's clinic (1714) became the mother school for all others and the model of that one which Van Swieten founded in Vienna in 1754. Only the brilliant result of this *first clinic in Germany*, which was so important in the development of medicine, induced the other universities of the fatherland to establish such clinics, which they had until then regarded as unnecessary (Göttingen 1780, Prague 1781, Kiel 1788, Leipsig 1798). Because of their undeveloped state there was much left to be wished for, even to the end of the century. The sick rooms allotted them were frequently too small and too low and bore no relation to the number of students and patients. Of these last there were indeed no lack, but there was a lack of the necessary diversity of cases. Professor Frank requested for his medical clinic twenty beds, no more and no less, which, evenly divided between the sexes, gave the students sufficient opportunity to observe, and did not rob the teacher of too much time. The beds in the ordinary hospital were to stand three feet apart, in the clinic about six feet apart, so that the students might have room enough. He wanted twice as many beds for the surgical clinic, because a number of patients with fractures and luxations consumed so little of the students' time, that a more frequent change was not necessary. No doubt much was done in the last half of the century for surgical clinics; yet, in the beginning of this century, there were a number of German universities that had nothing of the kind. We have seen in the foregoing chapter how the surgical service was managed in the Berlin Charité, and in the Vienna general hospital. In the latter, besides the polyclinic, there was a temporary clinic especially designed for instruction. When the school of medicine, surgery and practice was removed from the hospital, Professor Stoll, successor to de Haën, taught medicine; he had the right to select from all of the patients taken gratuitously, any whom he wished, for purposes of instruction, in his two rooms, which contained twelve beds. The same number and the same right, belonged to the professor of surgery, Professor Steidele, who every day, after the clinic, gave a lecture in surgery and a course in operations on cadavers. In the Charité there were two clinics, whose teachers belonged to the university, but the hospital had no further connection with the university, and they were not under the same management. Professor Reinlein directed a second institution of learning in the Vienna hospital, where surgeons were given special instruction in medical science. The students could assist at all ordinations of physicians and surgeons, and had access to the house of refuge and the lying-in hospital. Interest in surgical education arose quite early in Würzburg. When the university was reorganized in 1734 the professors were permitted to take students to patients in the hospital. This permission was the first impetus to the establishment of clinical instruction. The professor of anatomy and surgery taught theoretic surgery, while the demonstrator of anatomy and surgery (called also *operateur*) of Julius hospital, gave instruction in practical surgery and bandaging, at the bedside of the patients in Julius hospital. The chief surgeon chose two assistants from among the students (Obergesell and Untergesell), who helped him, and were excused from the payment of fees. C. C. von Siebold, who was at the same time academic teacher of surgery and chief surgeon of Julius hospital. was the first one who was in a position to give surgery students the advantages of a surgical clinic. Ophthalmology received very scant attention in Germany. Austria set a good example. When the general hospital of Vienna was founded, two rooms in it were assigned to Jos. Barth, and in 1812 a special ophthalmic clinic, with sixteen beds, was opened there under Professor Beer. All the walls, chairs, beds and dishes in them were colored green, to soften the light. In the Charité of Berlin, in 1816, a clinic in surgical ophthalmology was instituted.

If the German wished thorough training in surgery, which it was nearly if not quite impossible for him to get in his fatherland, he had to go to France or England. Such journeys were at that time not infrequently undertaken. If money was lacking for it, the treasuries of princes and bishops and even of the magistrates of certain cities, were opened for the maintenance of promising young men. In foreign countries ample opportunity was offered to study anatomy and to see surgical patients and operations. German surgeons who were not trained in Paris were not trusted at all; the reputation of the surgical school in Paris had extended through the whole world, and whoever came from there was proud to be its pupil.

Surgical instruction in Paris was carefully cherished even in the first half of the century. Every year three public courses in operations on cadavers were held in the royal garden in the collegio medico and collegio chirurgico at St. Cosmes, to which every one was freely admitted. All had free entrance to the great hospitals, where the most important operations of the most celebrated Paris surgeons could be witnessed every day, and in the Charité there were private courses in operations. The students also heard anatomy, gratis, in these three places, and had besides great opportunities to prepare in the Hôtel Dieu and in the Charité, as well as in the private houses of Winslow and Duverney (1725). They even found opportunities for operating on the living, under the direction of Le Dran. With all this, even in France, surgery was still separated from medicine in the second half of the century, which was paralyzing to instruction. They were taught in separate institutions, and here, as in Germany, an implacable hatred and party strife was cherished. Whatever was taught from the chair, lacked practical illustration in the hospital, and *vice versa*. So the faculties in Paris before the Revolution, although they were surrounded by the most important hospitals, did not possess a single sick room. The Ecole de Chirurgie, dedicated in 1779, had in their splendid building, situated in one of the narrowest streets of Paris, only a few beds at their disposal, much too few for their 700 or 800 students. Here all the surgeons of France were instructed free of charge, in an amphitheater that accommodated over 1,000 hearers. In 1785 Louis and Chopart taught physiology there, Fabre and Tenon pathology, Sabatier

and Pelletan anatomy, and Sue, with Lassus, taught operations. In the afternoon the colleges were better attended than in the morning, because in the afternoon about 350 barbers, who served their customers in the city, changed their coats and ran to the colleges. Montpellier was an exception. There clinical instruction was combined with the Ecole de Médecine; hence a physician from Montpellier was preferred to one from a Paris school. There *Desault* lectured, whose zeal overcame all the objections of the state. After three years in the Charité, he went in 1785 to the Hôtel Dieu, that great cavern, where patients were lost in the crowd, and were never made to serve the advancement of medical science. Whoever was acquainted with Paris and knew that prestige and money were worth everything there, must be surprised that Desault, who had neither, but owed everything to his knowledge, came to occupy the first place in France. Young, active, free from prejudice and national pride, he began to teach and train a large number of students. It was now for the first time appreciated how important to the advancement of practical surgery the Hôtel Dieu might have been, and of how little use it actually had been. Desault gave instruction at the sick beds, and created thereby the *first surgical clinic in France.* Every morning they began with the polyclinic, Desault examined the patients and spoke of their cases; then the internes read the history of the more important cases that left the hospital that day. They then proceeded to the operations. After explanatory remarks had been made, the patient was brought into the amphitheater and operated upon by Desault in the presence of the students. He even showed the opening of an abscess, so that all could see. For the sake of the school, he employed only the best methods in his operations. Then came a succession of dissections, visits, and finally a lecture on some surgical subject. The morning instruction lasted three hours every day. The credit of first lecturing at the bedside of the patient belongs to Desault; he did not stop with superficial visits, but took the student to the bedside, and there instructed and questioned him. There were many obstacles in the way of this innovation. The nuns, who were all-powerful in the Hôtel Dieu, intrigued and cried out that operations were performed in public, and that it was contrary to feelings of humanity; complaints against Desault were daily poured in on the administration, and envious colleagues disparaged his efforts. But all obstacles were surmounted by his perseverance. According to the statement of his great pupil Bichat, Desault did not possess the gift of eloquence, but there was a certain fire in his discourse, which illumined all he said. His carriage, his gestures, indeed his whole appearance, changed momentarily according to what he wished to express. His school soon became the center of surgery; the number of his hearers increased daily, and those of the public institutions decreased, a fact which especially vexed his adversaries. Foreign nations sent pupils to Paris, under the express conditions that they hear his clinical lectures, which were the first of their kind. Not only most of the surgeons of the hospitals in Paris and the provinces, but also the higher army physicians, were trained by him; he was indeed the teacher of most of the good surgeons, and there were few large cities where the pupils of Desault were not among the best surgeons. In the twelve years that he was chief of the hospital, the sum of practical knowledge which accrued to French surgery was greater than in the fifty preceding years. His successors were not in a position to continue instruction according to the method introduced by him, as they could not cope with the clergy and the nunneries; they fell back again into the old beaten path.

(To be continued.)

OPENING OF "THE WALTER GARRETT MEMORIAL BUILDING" OF THE PENNSYLVANIA HOSPITAL.

PHILADELPHIA, APRIL 24, 1897.

The managers of the Pennsylvania Hospital, having decided two years ago that the requirements of modern surgery demanded greater facilities than the hospital possessed at the time, appointed a committee to visit hospitals in other cities and confer with the surgeons of the institution with regard to necessary improvements. Under the guidance of Mr. Addison Hutton, architect, plans were drawn for important additions to the institution, and the work was energetically pushed to a conclusion. Through the liberality of a former president of the board, Mr. Wistar Morris, principally, the erection of a new series of buildings, upon the Spruce Street front, was undertaken and completed, which now contain the entire surgical division of the hospital. Last year, work on the remaining portion of the comprehensive plan was begun. The magnificent operating pavilion, receiving wards and children's wards, embodied in the large building known as the "Garrett Memorial," at the corner of Eighth and Spruce Streets, is now finished and was opened by the managers April 24. Addresses were made by Drs. Thos. G. Morton, J. M. DaCosta and J. B. Chapin, of the medical staff. The announcement was made that this building, believed to excel any of its kind in the world in completeness of its appointments, had been erected solely through the liberality of one member of a family of philanthropists, to which the hospital was already largely indebted for most generous gifts.

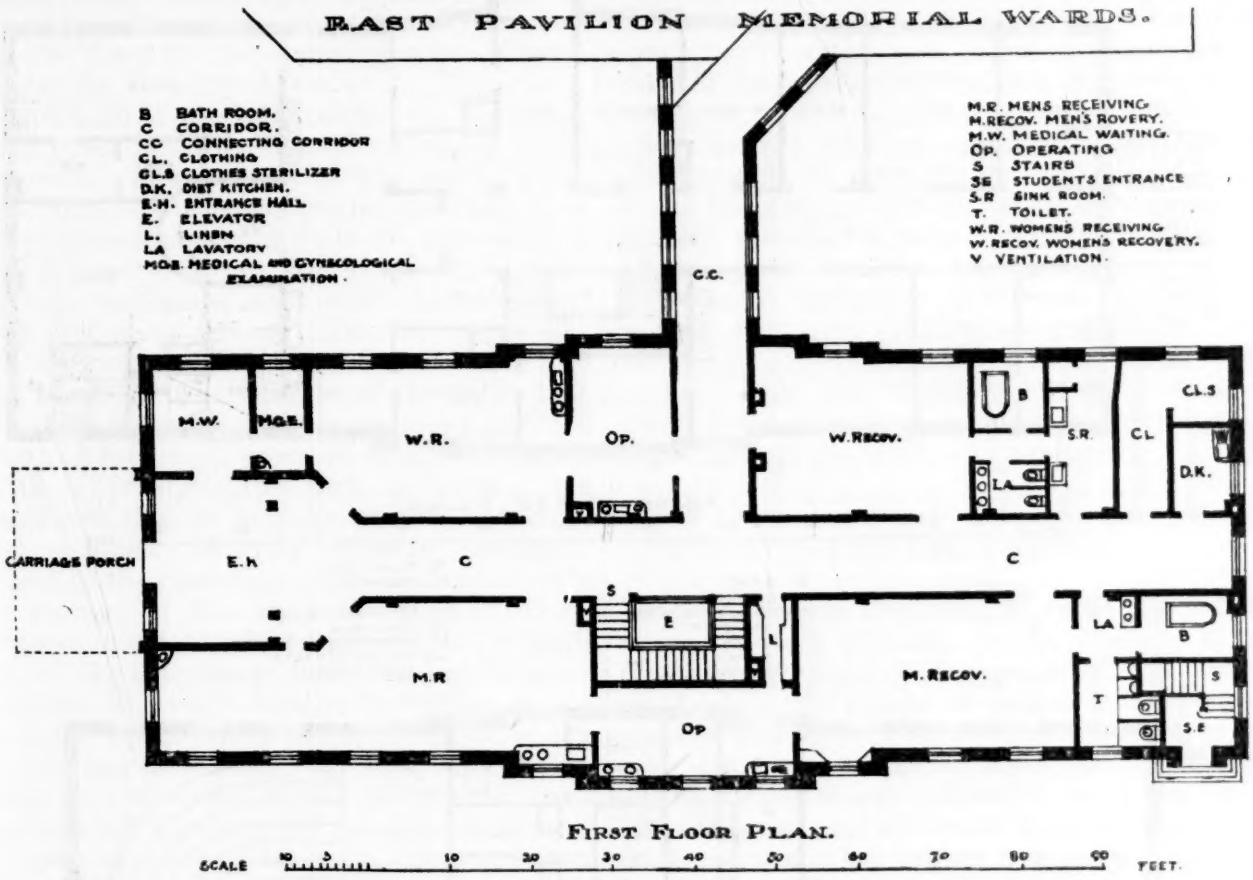
Description of the building.—Entering from the Eighth Street or eastern gate of the hospital, midway between Spruce and Pine Streets, and turning to the north, a broad cemented drive and sidewalk lead to the doors of the new building, about one hundred feet distant. A large glass porte-cochère overhangs the entrance, so that the injured and sick as they are brought by ambulance, police patrol or private conveyance, can be taken into the building without exposure to the weather. The first floor is but a single step above the grade. Passing through wide doors, one enters a large and well-lighted vestibule or lobby. On the left, opens a waiting room for ambulatory medical cases awaiting examination and perhaps admission, next to which is a smaller room in which physical examinations may be conducted. Upon the left side of the lobby is located the clerk's desk, connected by telephonic communication with every portion of the hospital; there are here placed benches for those inquiring after friends or accompanying the injured. At the farther end of the lobby, a wide central hall extends to the stairs and elevator, and also to the corridor connecting this building with the other buildings of the hospital. Upon either side of this hall, opening at an angle to the lobby, are doors leading to the receiving wards—that on the right for men, and on the left for women. The men's receiving ward, measuring 53x18, termi-

nates at the farther end in doors leading into a small operating room. Cases not to remain in the hospital will receive dressings or minor operations in these rooms, and then depart as they came. But those patients who are to remain will pass from the operation and dressing rooms through other doors, into a large reception ward. This ward will contain fifteen beds and in it all patients will be undressed, bathed and put in proper condition to be distributed to such portions of the main buildings as their disease or injury may require. At the northern end of the ward opens a passage communicating with the baths and lavatories. Patients found to require serious operations, after being prepared as far as possible in this apartment, will then be transferred to the second floor.

The women's receiving ward, to the left of the lobby, is similar to that for men, but not so large. It likewise opens into an operation and dressing room at its northern end, and beyond is a similar but smaller ward. Patients recovering from anesthesia after minor operations will be detained in the reception wards until they are in condition to return to their homes. Sunstroke cases, as heretofore, will not be taken into the receiving wards, but will be treated in the cool, deep basement, or in large tents in the airy grounds surrounding the building, until fit to be removed to the main wards. Beyond the women's bath and lavatories, but communicating also with the main hall, is an apartment where scullery work is done for all the wards of the floor. Here will be a flushing sink for washing utensils, sinks, racks for drying, and a steam-closet wherein all articles of clothing, etc., may be warmed or dried rapidly. When it is considered how many of those coming to a hospital are cold and wet and shocked by exposure, loss of blood and concussion, it will be seen how useful this novel feature will be. Next, on the north, and opening only to the hall, is a room devoted to temporarily ticketing, bagging and storing the clothing of each patient. From it opens a small room containing a steam and hot air sterilizing oven, in which clothing infected with disease germs or vermin may be steamed or baked sufficiently to destroy effectually not only all parasites, but their eggs as well, a very important consideration for the protection of the hospital from such pests. At the extreme northern end of the corridor to the left is placed a diet kitchen from which to serve food to those temporarily occupants of beds in the quiet wards. Sufficient beds are provided in the reception wards to house all who may be admitted between sunset and morning, so that the quiet of the main wards may never be disturbed by entry of new patients during the night, or at any other time by those in danger of speedy death, or recovering from the effects of ether, or under the influence of liquor.

At the exact center of the building, on the right hand, a capacious elevator runs from basement to roof, surrounded by iron grill work, and a broad marble staircase. Opposite the elevator and stair shaft is a corridor, nine feet wide, leading at right angles to the main corridor of the basement of the hospital, thus affording ready access to all the basement corridors of the whole institution and to the elevators running upward therefrom to the various divisions and wards. The receiving wards will thus become the distributing center for all cases admitted. Patients will here be examined, cleansed, put to bed, receive preliminary treatment, and be classified for distribution to the appropriate wards. Persons destined to occupy private rooms will pass at once through the corridors, on wheeled trundles, to the elevator leading to those apartments, without passing through the receiving wards.

Ascending to the second floor, the visitor finds himself surrounded by the most complete series of rooms and arrangements to facilitate modern surgical treatment that has yet been installed by any hospital in the world. To the right, as he alights from the elevator or ascends the beautiful marble staircase, large double doors lead into the great amphitheater, or

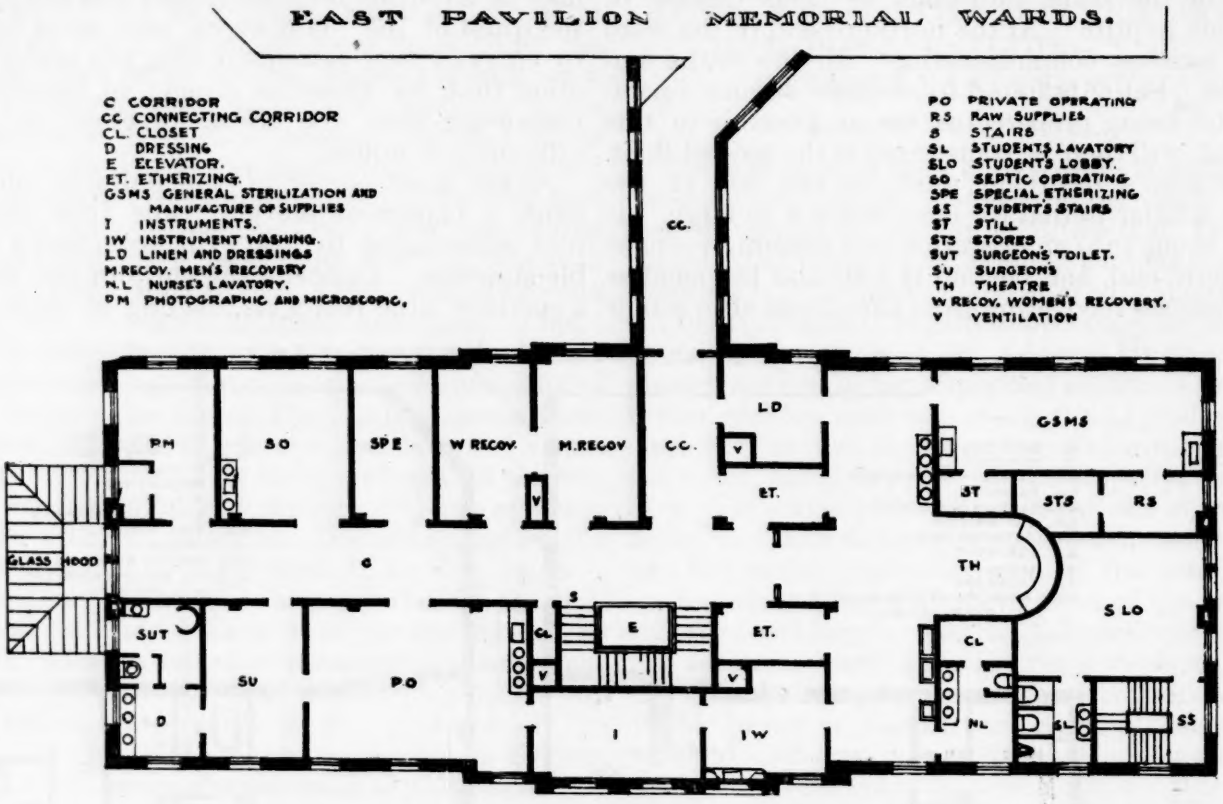


FIRST FLOOR PLAN.

main operating room, where clinical instruction will be given. On either side of these doors, in communication with the corridor, as well as the amphitheater, are two rooms where patients can be quietly etherized before being taken into the operating theater. This amphitheater, measuring 45x46, is lighted by a great glass dome covering its entire center, and many plate glass windows surrounding it on all sides. But, as if this were not sufficient, the whole central portion of the roof toward the north has been made transparent by great sheets of thick plate glass. Under the glazed dome stands the operating table in a large open space, surrounding which on three sides (toward the north) arise seven tiers of seats, numbering in all 200. These seats rise abruptly, so that every spectator will have a free view over the heads of all sitting below him. Each student will have a roomy and comfortable iron and wood suspended chair, very different from the hard wooden benches to which medical students have been so long accustomed. Behind the actual operating space, a clear area of 13x46 extends from one side of the building to the other, which facilitates ingress and egress of beds and permits the assemblage, without crowding or confusion, of those appliances and conveniences which have become necessary to the highest development of the healing art. On either side of the operating space are located sinks, flushing tanks, wash basins, pipes bringing steam for heating and sterilizing, and other pipes from which sterilized water can be drawn of any desired temperature, from a splendid brass water filter and sterilizer on the right side of the area.

There are also provided steam closets for heating

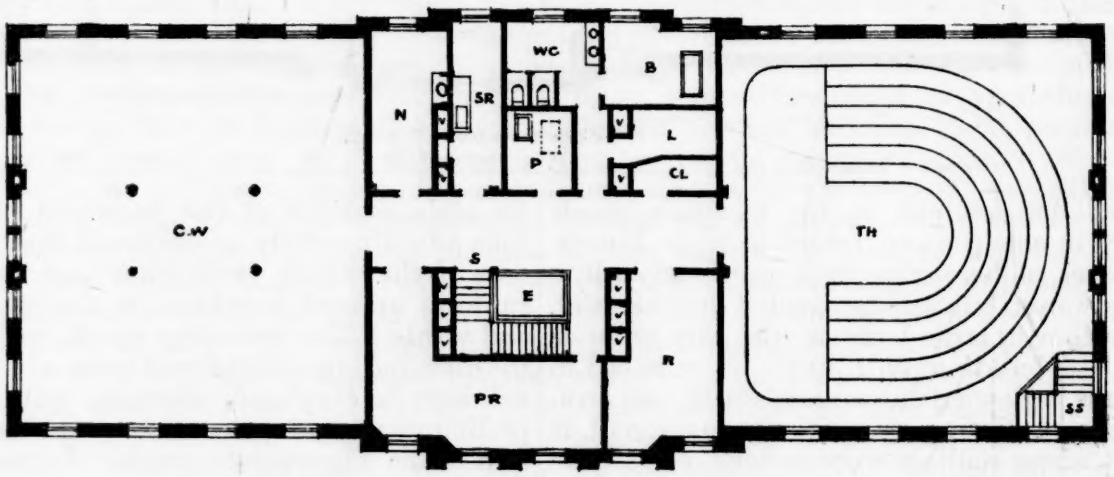
EAST PAVILION MEMORIAL WARDS.



SECOND FLOOR PLAN.

SCALE 10 5 1 10 20 30 40 50 60 70 80 90 FEET

B BATH
CL CLOSET
CW CHILDRENS WARD.
E ELEVATOR
L LINEN
N NURSE
P PANTRY
PR PLAY ROOM
R RECOVERY
S STAIRS
SS STUDENT'S STAIRS
SR SINK ROOM
TH UPPER PART OF THEATER
WC WATER CLOSETS.
V VENTILATION



THIRD FLOOR PLAN.

SCALE 10 5 1 10 20 30 40 50 60 70 80 90 FEET.

blankets and linen, racks holding swinging bottles of antiseptic solutions, movable tables for instruments and dressings and other appliances. A cluster of electric lights above the operating table afford light at night, and electrical apparatus is also provided for resuscitation and treatment.

The spectators or students enter the amphitheater by a special gate and door opening from Eighth Street, at the corner of Spruce. This entrance, approached by a flight of broad granite steps, is one of the principal architectural features of the building. Ascending a short stairway, a large student's lobby is reached, from which open a coat room and lavatories, while, again ascending the stairs, the area surrounding the amphitheater above the seats is entered. Thence, flights of descending steps render all of the seats easily accessible. It will be noted that by this arrangement the students are practically kept outside of the hospital; their relation to the operating and lecturing portion of the room will be similar to that of an audience to the stage in a place of entertainment, except that the floor of the operating space is some four feet below the first tier of seats.

On the right hand of the area, behind the operating space, doors open to the nurses' dressing room beneath the seats. Here all nurses who are to assist at operations will invest themselves in sterilized linen clothes and prepare themselves with the same care as the surgeons for carrying out the antiseptic details. This room has washbasins and other necessary fittings, as well as a water-closet. Upon the other side of the amphitheater, a door leads under the seats into a long room where all the dressings of the entire hospital will be manufactured. This apartment is fitted with a battery of four high pressure steam sterilizers, sinks, and all other apparatus, such as cutting and winding machines, that go to make up a small factory for surgical supplies. Directly opposite this room, across the area of the operating room, is another room devoted to storage of the finished supplies, which room also communicates with the corridor to facilitate distribution of the supplies to those coming for them from the various wards and smaller operating rooms.

Leading to the south out of the operating area, is a small room devoted to washing and sterilizing instruments. Next to the south, is the instrument room where is aggregated the surgical armamentarium in five large cases of plate glass and enameled iron. South again of the instrument room is the private operating room. This large chamber is devoted to such operating as is done upon private patients or when the amphitheater is in use by another surgeon. It is fitted complete for all ordinary purposes, and is perfect in its appointments as the main operating room, but will contain no provision for onlookers.

The remaining rooms in this suite along the south side of this building, are devoted to the private use of the medical staff. The first is a sitting and consulting room; the second a dressing room, while a third comprises a lavatory and bathroom. All of the rooms between the instrument room and surgeon's lavatory, besides communicating with each other, open upon the main corridor.

Upon the west side of the corridor are located two rooms for the recovery of male and female patients from the effects of anesthetics before being transferred back to the wards. Next a room for etherizing patients for the private operating room. Next again, is an entirely novel feature, namely, a room devoted exclusively to operations upon cases affected with virulent and dangerous infectious diseases, such as lockjaw, anthrax, glanders, tuberculosis, gangrene, etc. This room is lined throughout with hydraulic cement, and has doors and windows of such special design as will permit it to be filled by live steam under slight pressure. The plan is to here operate upon virulent cases and then leave everything that has been used in the room. The doors will then be securely fastened, and, from attachments in the corridor, steam will be turned on from pipes suspended all around the cemented walls so as to flood the chamber with an element absolutely destructive to all germs. After a sufficient exposure to this agent, the room may be cooled off and entered. It is thus expected to do away with what has been a great danger in the past from these virulent cases that from time to time must be admitted and occasionally communicate infection to other persons. The last room on this side of the corridor, the southwestern corner, is to be devoted to microscopic and photographic work. It will contain a dark room, sinks, and other necessary appliances and will be especially fitted for elaborate use of the Roentgen X-ray, fluorescent screens, and skiagraphy

The second floor, or operating suite, connects by corridor with the main floor of the surgical pavilions of the hospital, so that patients are transported the shortest possible distance between the wards and operating rooms.

The entire third floor of the new building has been assigned to a large children's ward, comprising space for twenty-five beds, nurse's room, pantry and diet kitchen, sink and utensil room with steam drying closet, baths, lavatories, a small isolation ward, and a large cheerful playroom and sunbath.

SELECTIONS.

On New Tuberculin Preparations by Robert Koch.—After a long silence, R. Koch addresses (in the *Deutsche medicinische Wochenschrift*, April 1) the profession with new theories and facts on the subject of tuberculin and immunization against tuberculosis. The results are more likely to startle the medical world in a still higher degree than the tuberculin era. But experience has been sufficient to guard this time against over-enthusiasm, and will enable the scientific world to form a closer analysis of the subject and perhaps give some new directions.

According to Koch, immunity may be brought about by only one factor, but it is not necessarily so; it can be composed of two components or perhaps more. One is simple and pure immunity to toxins, as in tetanus (Behring, Kitasato). It disappears after several weeks. Another is pure bacterial immunity, exclusively against the body of the bacterium, like immunity against cholera and typhoid fever (Pfeiffer). The ideal immunization must therefore have the purpose to protect the animal or human body against every danger and not only against the one single danger derived from the microörganisms.

In men there is apparently no immunity against tuberculosis, and cured individuals are more susceptible to infection, but there can be observed under certain conditions an immunity in this disease. The observation of miliary tuberculosis in man and guinea pigs shows that there is, as a rule, a stage where the bacilli disappear, which in the beginning were present in great number. This true bacterial immunization comes generally too late for the victim. These observations have given occasion to Koch to discover a method by which such immunization can be produced at a time which is valuable to the vic-

tim. He starts from the fact that immunization can only take place in such cases where the body is inundated in a short time by bacilli in great number, and he finds in this fact the explanation why in an average case of localized tuberculosis, there is no apparent immunity. The bacilli in the body are only in small number and grow slowly, mostly surrounded by necrotic tissue, and are absorbed only after a long time after their death and following chemical decomposition. Where the bacilli grow in large number, as in cavities and on the surface of mucous membranes, they are not absorbed at all and therefore general immunization can not take place.

In his efforts to obtain artificial immunization he is, therefore, guided by his theory that such immunization is only possible when numerous tubercle bacilli are distributed rapidly in the body and come into actual contact with living tissues, as in miliary tuberculosis and in experimental guinea-pig tuberculosis. As nearly as possible similar conditions must be created. In his effort to produce this he met with considerable difficulty, as bacilli distributed throughout the body in large quantities are only very slowly absorbed. He therefore considers that bacilli which are unaltered in their structure are not suitable for immunizing purposes. To facilitate their absorption he followed in general three different processes: First, treatment of the bacilli with chemicals and heat; second, extraction of bacilli; third, destruction of the bacilli by mechanical means.

The treatment with chemicals (diluted mineral acids or boiling in concentrated alkalies) gave preparations which were slowly absorbed, and this process was followed by two great changes in the composition of the bacillus with a destruction of the immunizing power.

Through extraction of the bacilli by glycerin and the employment of the absorbable constituents he arrived at tuberculin, whose diagnostic value he emphasizes and to whose therapeutic value he adheres. But he believes that only immunity against toxins, no bacterial immunity, can be produced by it. The reactions produced by tuberculin, which according to his statement are essential for the immunizing effect, subside before an absolute cure is perfected. Hence his efforts to produce a bacteria immunizing preparation. The extraction of the bacilli with a decinormal solution of sodium hydrate without complete filtration of remaining bacilli, gave a preparation which he calls *TA* (alkalin extract), with not entirely satisfactory results, on account of the difficulty of absorption of the remaining unaltered bacilli. After filtration to remove them the immunizing power was too much decreased. To make the constituents of the bacilli easier attackable for the absorbing elements of the body, Koch resorted to their complete destruction by mechanical means.

The necessity of such procedure seemed confirmed through the observation of certain constituents of the tubercle bacilli, namely, two chemical bodies, which Koch classifies among the group of "unsaturated fatty acids." The first is soluble in dilute alcohol and readily saponified by sodium hydrate, the second is only soluble when boiled in absolute alcohol or ether and very difficult to saponify. Both are stained intensely by carbolic fuchsin and retain stain after being treated with dilute nitric acid and alcohol. The extraction of the first variety of fatty acids leaves the second, which retains the stain and therefore is the bearer of the specific staining of the tubercle bacillus. These latter "fatty acids" can slowly be extracted by hot sodium hydrate and the process may be followed under the microscope. The "fatty acids" leave the body of the bacillus in stainable drops, the bacilli retain their form from the beginning, but do not take up the specific stain. Koch believes that these fatty acids form a protective "cover" against absorption of the bacillus in the body. Hence the necessity to destroy this protective cover.

By crushing and pulverizing the perfectly dry and virulent cultures in an agate mortar and centrifuging a suspension of the powder in distilled water until no more stainable bacilli are present, Koch derived two preparations, which contain all immunizing properties which can be obtained from the bacilli. The opaque fluid above (oben) the sediment after centrifugation is called *TO*, the sediment or remainder (Rest) is named *TR*, which is treated by the centrifuge again until no sediment derived from constituents of the bacilli remains and a clear fluid is obtained.

TO shows after first staining with carbolic fuchsin and afterward with methylene blue, purple cloud-like formations, while *TR* shows masses stained blue. Fifty per cent. glycerin does not change *TO*, while it precipitates *TR*. Koch therefore thinks that *TR* contains those constituents of tubercle bacilli, which are not soluble in glycerin, therefore not contained in the glycerin extract. *TO* has similar qualities as tuberculin and corresponds in efficiency with the alkalin extract *TA*, except that there is no danger of forming abscesses after subcutaneous application. The immunizing properties are very similar.

TR acts decidedly immunizing. It causes reaction in tuberculous individuals if too large doses are employed, but the effect is entirely independent of the reaction. With tuberculin *TA* and *TO* it is necessary to produce reaction in order to produce curative effects; not so with *TR*. "The value of this preparation is expressed by Koch as follows: That *TR* represents all immunizing factors contained in the culture of tubercle bacilli is evident from the fact that a man who is immunized against *TR*, even if all reactions were avoided, does not react any more to large doses of simple tuberculin and *TO*, he is immunized against all components of the bacillus. I have observed this property of *TR*, which appears to be of utmost importance, in such a large number of cases, that there can not be any doubt as to the correctness of the observation."

Koch further gives some technical details about the preparation of *TR* and directions for its therapeutic employment, which consists in subcutaneous applications with avoidance of reaction, until the highest possible dose (20 mgr.) can be arrived at.

In a summary of the animal experiments he points especially to the progressive changes in liver and spleen, disappearance of the necrotic yellow foci, in place of which he found grooves on the surface, which give to the organ an uneven characteristic appearance (cicatrizations). A cure of tuberculous guinea pigs, in which the disease, as is known, progresses very rapidly, could be perfected by Koch only when treatment was early begun one or two weeks after inoculation. This rule applies also to man. Very advanced cases, especially those with secondary infection particularly by streptococci, are only rarely accessible for the specific treatment of tuberculosis. Koch excludes in general those patients with a temperature above 38 C. (100.4 F.). He has treated a number of suitable patients with lupus, and has to report without exception considerable improvements. He speaks only of improvements, though not a few cases would merit the expression cured, which he does not wish to adopt before a sufficiently long period without relapse has passed. In lupus he obtained continued improvement with very slight local reactions. In pulmonary tuberculosis the increase of râles was the only local symptom, which soon subsided. The quantity of sputum decreased even after a few injections and often it subsided entirely, with a corresponding disappearance of râles and decrease of the area of dulness.

In conclusion, Koch believes that possibly other methods, perhaps combinations with *TO* or with serum preparations, which are obtained with *TO* or *TR*, may lead to better and speedier results. But he maintains that further improvements of the preparation as such can not be expected.

It is apparent that the long looked-for article of Koch makes us richer by one new theory of immunity in tuberculosis, but

great reserve will be necessary as to the acceptance of the therapeutic conclusions thereby gained. We have certainly to await the promised publication of his experiments on animals and men before we can judge further. As far as it can be conceived the results he has arrived at in guinea pigs are identical with that of other experimenters. In this country the experiments with preparations from the tubercle culture, which were published some time ago by Professor Klebs, showed in guinea pigs the same grooves and disappearance of necrotic parts in liver and spleen. He demonstrated microscopically the regressive changes taking place in the tubercular tissue and published photographic reproduction of the appearance of the liver and spleen in experimental animals, proving the possibilities of artificial immunization. It is to be wondered how little credit in general Koch gives to other experimenters outside of the "Institut für Infectionskrankheiten," and particularly those working in this country. As to his discovery of fatty acids in the bacilli, which fact induced his idea of the necessity of employing mechanical means to favor the solubility of the bacilli, it seems evident that these acids are originated from the fats, which were observed long before Koch, especially in this country. Hammerschlag and Nensky observed them first and Dr. de Schweinitz of Washington made the first quantitative determination. Independently of the latter, Professor Klebs has published in the JOURNAL the results of his experiments (July 25, 1896). He found two fats in the bacilli, with different fusing points and gave an exact statement of their physical and chemic quantities and especially he pointed out that these fats are the single cause of the specific staining of the bacilli. Abell of Baltimore further found glycerin in the alcoholic ethereal extract, explaining the high hygroscopic quality of the bacilli.

All the important results of these tedious experiments of prominent scientists in this country are completely ignored by Koch, or if known, no credit is given for them. In the interest of true science it is to be regretted that Koch and the other members of the "Institut für Infectionskrankheiten" try to assume an autocratic leadership of the whole scientific world. Nevertheless the way opened by Koch through his tuberculin and his latest experiments allow reasonable expectations in the "causal therapy" of tuberculosis, but it will need the work of others and the combination of many factors, to reach an absolutely satisfactory result.

Lake Erie as a Source of Civic Water Supply.—The continued presence of *typhoid fever in any municipality is as inexcusable as vermin in a modern dwelling*, and indicates a degree of shiftlessness and apathy not consistent with modern methods and needs.

Lake Erie, the water supply of Buffalo, as well as of the cities of Toledo, Cleveland, Dunkirk, Erie and Ashtabula, is subject to periodic upheavals, due to its shallowness and the strong west and northwest winds occurring during the winter and spring months. As a result Buffalo has roily water during five or six months of the year, beginning with November or December and lasting until May or June. It will be interesting, therefore, to compare the results obtained by the city chemist and city bacteriologist of Buffalo and see how they agree or disagree.

Both chemic and bacteriologic examinations of the water should be made, at least once weekly, to determine its character as a safe or dangerous water for domestic use, and if contamination is shown to exist, the services of an engineer be enlisted to detect, if possible, the cause and origin of such contamination. This last proposition is the one to which I wish to call attention. Who is to decide whether a water is potable, if the chemist and the bacteriologist do not agree? Up to within a few years ago a chemic examination of water was deemed sufficient to decide its potability, and upon the decree of the chemist the water was either accepted or rejected.

The chemist was generally able to detect the presence of decomposing organic matter, either vegetable, animal, or both, which in his analysis was indicated by the presence of ammonium compounds and the oxygen-consuming power of the water. The ammonium compounds, particularly the albuminoid ammonia, are usually the result of putrefactive fermentation of nitrogenous matter, and water of high purity should contain from none to .041 parts per million, while in impure water it ranges upward from .082. The chemist is only able to say that a water contains organic matter in the process of fermentation, but can not say how virulent or innocent are these destructive agents. It is now generally accepted that organic matters, which by one means or another find their way into surface waters, are oxidized and eventually reduced to simple substances by the operations of microöganisms, and not by mere chemic changes independent of them. In other words, the oxidation of impure, polluted water is the result of bacterial activity; but what is their nature?

The decree of the bacteriologist is now imperative in deciding the pathogenic or non-pathogenic character of the bacteria. The water from artesian wells contains no bacteria, while that of sluggish streams, lakes and rivers receiving the sewage of large cities contains millions of colonies per cubic centimeter. Authorities consider a water having 250 bacteria per cubic centimeter, or less, as entirely safe and usable.

It is now generally recognized that the mere enumeration of the number of colonies which develop from a water under investigation is not a sufficient indication upon which to found an opinion as to its potability. The greater number of colonies, the more organic pabulum is present for these microörganisms. The bacteriologist is not able as yet to give any definite idea of the amount of such organic matter, while the chemist is able to do so with considerable precision. But the bacteriologic examination may prove of great value if it succeeds in demonstrating the presence of certain pathogenic bacteria, and in thus preventing the use of a dangerous water. Moreover, the number of colonies is an index of the probable quantity of organic matter which may come from a dangerous source; and the dangerous pathogenic bacteria are not only likely to be present in such water, but they can more readily multiply in it. The number of varieties of non-pathogenic micrococci found in water is about thirty, and pathogenic micrococci two —the staphylococcus pyogenes aureus and the micrococcus Biskra. Of the non-pathogenic bacilli seventy-nine varieties have been found, while of the pathogenic bacilli sixteen varieties, including the bacillus of typhoid fever, of cholera, and the bacillus coli communis. These three varieties are the most important findings possible of a bacteriologic examination, and are positive proof of the presence of alvine dejections in the water.

In January, according to the city chemist, the water was in good condition, while the bacteriologist again found the bacillus Janthinus, and reported the water to be in "very poor condition" for the first half of the month and a gradual improvement the last half. The number of typhoid deaths decreased to five. In February and March both officials found the water in good condition, also evidenced by the death rate and the typhoid deaths, three and four respectively.

For the months of April and May there exists a disparity between the two reports, the chemist claiming that the water was in "excellent condition" during May, while the bacteriologist found the water "not in good condition," because of large bacterial contents. The deaths from typhoid fever were four—an unusual time for typhoid to be present. For May the chemist found evidences of contamination, while the bacteriologist, on the preceding day, considered the water in good condition, containing on that day only 270 bacteria per cubic centimeter. In June both officers found the water in good condition.

Reviewing the opinions of the city chemist and the city bacteriologist, it is evident that the disparity occurs whenever the water is in an improper and unhealthy condition, and when such is the case, it is only fair to assume that some error has been committed favoring the water.

The bacteriologic examination as well as the chemic analysis are, therefore, alike necessary in demonstrating the purity and safety of a drinking water, and neither should be omitted when the least suspicion exists as to its contamination. The consumers should be immediately warned of the dangers of using such water in its raw state, and should be enjoined to make some attempt at purification, either filtering, boiling or condensing. This applies not only to those cities whose water supply is open to contamination, but to every city having a public supply.

Besides the chemist and bacteriologist, the water department of every city, whose supply is liable to contamination, should have the services of an engineer whose fame does not rest upon his theoretic knowledge and bureaucratic propensities, but upon his practical information on the laws of hydrology and hydrodynamics. Such an one, well versed in the hydrography of his locality, could almost prognose the condition of its water supply and be an important aid to the city's health department. As such he would be able to render the same valuable services as does the local forecaster in meteorology, and give warning several days beforehand of marked changes in the quality of the water. While the chemist and bacteriologist are only able to detect impurities after contamination, the engineer could foresee these changes and give sufficient warning, or attempt to overcome the impending contamination before the city mains and reservoir are filled with the poisonous liquid.

Our present knowledge of the water supply question leads up to five propositions, as follows:

1. That the water supply of any city or village should not in any possible way be liable to pollution or contamination from the sewage of any other community.

2. That the sewage of a city should not be emptied into any watercourse not having a current of three to five miles per hour, and then the sewage entrance should be at a distance of one mile or more from the intake.

3. When the water supply of any city or village is a navigable stream, the water should be sand-filtered before pumped into the city reservoirs or water-mains.

4. That for ordinary drinking purposes the water should not be taken in its primitive or raw state, but be either filtered, boiled or distilled and aerated.

5. Both chemic and bacteriologic examinations of the water should be made, at least once weekly, to determine its character as a safe or dangerous water for domestic use, and if contamination is shown to exist, the services of an engineer be enlisted to detect, if possible, the cause and origin of such contamination.—Dr. W. C. Krauss, in the *Cleveland Journal of Medicine*, March.

PRACTICAL NOTES.

Successful Treatment of Sciatica with Copaiba.—Dr. Glorieux reports three cases of obstinate chronic sciatica cured in a brief period with 40 to 50 drops of copaiba a day, divided into several doses and taken on wafers.—*Semaine Méd.*, March 24.

Sterilization of Glycerinated Vaccine Pulp.—Exposure of the pulp to a temperature not over 30 to 37 degrees C. and for not longer than twenty-four hours, will kill the staphylococcus aureus and albus, without injuring the vaccine.—*Semaine Méd.*, March 31.

Methylene Blue in Headaches.—Benno Levy recommends methylene blue as extremely effective in curing headaches. He prescribes it in gelatin capsules: methylene blue (Merck) and pulverized nutmeg āā 0.1; one capsule four times a day. One capsule brings relief and four usually complete the cure.—*St. P. Med. Woch.* from *Berlin klin. Woch.* No. 45, 1896.

Treatment of Chilblains with Compression.—Dr. E. Müller, observing that chilblains burn and sting more when the blood pressure in them is increased, has treated them successfully by compression. The member is first elevated for a while to reduce the amount of blood in it as much as possible, and then narrow strips of sticking plaster, 10 to 15 cm. long, are applied, lapping over each other, entirely covering the chilblain, and drawn so tight that the swelling is forcibly compressed over the entire surface.—*St. Petersb. Med. Woch.*, March 13.

Still Another Carcinoma of the Liver Extirpated.—Schrader describes a case operated seven years ago. The patient, a woman of 30, has been perfectly well since she was relieved of the neoplasm, 4x3.5 cm., which was removed through a large wedge-shaped opening, the wound in the liver cauterized and its edges sewed carefully to the edge of the wound in the peritoneum, thus making the wound in the liver extra-peritoneal. The abdominal wound was sutured as usual; there was no fever, and the wound had firmly closed over in eight to ten weeks.—*Deutsche med. Woch.*, March 11.

Two Hitherto Undescribed Symptoms in Addison's Disease.—Renner calls attention to a couple of phenomena that accompany this disease but are not mentioned in the text-books, the intolerable pruritus and the presence of numerous wart-like elevations scattered over the surface of the skin. He describes a typical case of the disease in which these wart-like prominences grew more numerous toward the end. At the necropsy the left suprarenal capsule was found in a state of cystic degeneration, with a cavity containing caseous products.—*Presse Méd.*, February 27, from. *Ver. Bl. f. Pfaelzer Aerzte*, Vol. xii, No. 3.

Case of Goitre in a Syphilitic Cured by Thyroid Treatment.—The goitre had begun to develop five years before. At first it had yielded to electric treatment, but soon returned and resisted every form of medication and treatment, until thyroid tablets were administered, commencing with one and increasing by one every third day, up to five. The "effect was prodigious," and in less than four weeks the goitre had entirely disappeared. The syphilis was in the tenth year.—*Presse Méd.*, February 27, from *La Policlinique.*

Resorcin in Whooping Cough.—Roskam now has a record of 290 cases of whooping cough treated locally with a 2 to 3 per cent. solution of resorcin applied to the glottis on a fine sponge, every four hours during the day, commencing at 6 A.M. and once or twice during the night. In 200 cases the children were cured in less than fifteen days, and the general health improved rapidly from the first. Others report equally favorable results. Some administer the resorcin internally at the same time.—*Annales de la Soc. Méd.-Chir. de Liége*, March.

Modern Progress in the Treatment of Gout.—All that we can claim over the ancients is that we have a more rational conception of the diet required, although the most eminent authorities still disagree in regard to the particulars; that we have discovered in the amins powerful therapeutic aids, although none of the combinations yet discovered, piperazin, lysidin, lycetol and urotropin, are free from serious disadvantages, but the way is indicated for new and truly effective discoveries, and we also have found that there is a peculiar affinity between uric acid on the one hand and urea and salicylate of soda on the other.—*Deutsche Méd. Woch.*, March 11.

Iron and Arsenic in Anemia.—If the chemical transformations in anemic subjects are studied, the cases can be classified into two categories: 1, those in which the nitrogenous transformations are diminished and the oxidation decreased; the coefficient of nitrogenous oxidation falls to an average of 75 per cent. from 80 or 82 per cent.; 2, those in whom the oxidation and nitrogenous transformations are increased. The

medication beneficial in the first category is directly contra-indicated in the second, especially iron, which increases oxidadation, and arsenic, which modifies these processes. The failure of iron in some cases, and its success in others, is explained by these facts.—*Semaine Méd.*, March 31.

Educating the Left Hand.—Bueno de Miranda describes in *O Brazil Medico*, January 22, his method of extirpating a subglottic polypus of the larynx with epiglottic complications which rendered it necessary to use the laryngoscopic mirror and the probe while extirpating the tumor. He accomplished it by educating his left hand until he could hold two instruments firmly with it; the mirror, held between the third phalanx of the middle and ring finger, the handle resting in the groove between the thumb and palm; and the probe, with its point wrapped in cotton, held between the third phalanx of the middle and fore finger, the handle resting on the pulp of the thumb. The two handles were pressed firmly together, the instruments crossed. By this means the right hand was left free to extirpate the neoplasm with ease.

Router's Method of Operating Uterine Fibromas.—1, opening into the anterior and posterior culs-de-sac through the vagina; 2, laparotomy and treatment of the adnexa according to indications; 3, exteriorization and enucleation of the fibromas; 4, enlarging the incisions into the culs-de-sac; 5, hemostasis of the broad ligaments with an elastic band placed astride each ligament, around which it is twisted twice, and the ends tied with a silk ligature; section of the pedicles; ablation of the tumor; 6, toilet of the peritoneum and drawing the elastic fastenings into the vagina; they drop off spontaneously in twenty to forty days. His experience has been nineteen cures and four deaths with this technique.—*Presse Méd.*, March 27.

Pneumococcus Peritonitis in Children.—This disease can be readily diagnosed and as it yields atonce to surgical intervention, Prof. F. Brun describes the symptoms so all can recognize it, in the *Presse Méd.*, of February 27. It commences with violent pain in the abdomen, fever, vomiting and diarrhea. In a short while this general commotion subsides, and the fever assumes the characteristics of a suppuration fever, while a dull, thick tumefaction appears in the iliac fossa above the pubis, in some cases with fluctuation. This local lesion is significant alone, but it assumes almost pathognomonic importance when it is accompanied by the special sign which he has found mentioned in nine of the fourteen cases on record (Lucas-Championnière, Jalaguier, Kirmisson), the swelling and inflamed appearance or fistulization of the umbilicus. In these fourteen cases, three died; one recovered after spontaneous evacuation through the umbilicus and into the vagina. The remainder recovered after laparotomy. His own experience has been four recoveries in five cases. The operation required is very simple, scarcely more than opening an abscess. In the fourteen cases, all under 15, the diagnosis was confirmed by bacteriologic investigation, and all but three were females. He suggests that the latter fact may elucidate the methods of peritoneal infection, as in every case where the lesions were clearly defined they were located in the lower part of the serosa.—*Presse Méd.*, February 27.

Ascites in the Omentum.—A comparative study of this rarely recognized form of hydrops appears in the *Revista de Med. y Cir.* of February 25, the author, Dr. A. P. Miro, having had occasion to observe three cases. Relief and cure were obtained by puncture at a point midway between the xiphoid appendix and the left anterior, superior spine. The syndrome differs from that of ordinary ascites by the location of the pain and pressure in the epigastric instead of the hypogastric region, the gastric dyspepsia and sensation of fulness in the stomach after eating, the dyspnea after eating at first, and later, continuously, aggravated by moving about, and assuming the horizontal position, or by the slightest pressure on the epigastric region, which may even cause syncope. There is resonance in the epigastric and hypogastric regions, with an area of dulness in the center, encroaching from above downward. The first point where fluctuation can be distinguished is in the upper part of the abdomen. The epigastric region is the first to protrude, and the last to subside after puncture. One case he described, required the introduction of a certain amount of artificial serum to counteract the effects of the withdrawal of over sixty liters of fluid in the course of twelve punctures, after which the patient recovered and has been in perfect health during the eighteen months since. He ascribes the accumulation of the fluid in his cases to the closing of the foramen of Winslow by congestion of the neighboring organs from the use of alcohol and highly seasoned food.

The Morphology and the Chemic Products of the Diplococcus Pneumoniæ and Some Results of Vaccination.—Auld (*British Medical Journal*, March 27, 1897, p. 775) points out the difficulties surrounding isolation of the diplococcus of pneumonia in pure culture, as well as the variability in virulence that the organism displays. He describes the following as a delicate test for the purity of the growth: On the surface of sloping agar a streak-culture forms a very fine dew-like moisture, absolutely transparent with reflected light. If the slightest trace of opacity can be detected, the culture is impure. From the blood of inoculated animals that yielded a pure growth on agar were obtained an albumose and organic acid. Injection of the former into a vein was followed by shock and a fall in temperature, with subsequent elevation. No other pathologic effect was observed, although the animal lost in weight. Intrathoracic injection of the albumose was soon followed by marked dyspnea and elevation of temperature. When the animal was killed, pleurisy and consolidation of the lung were found, while the blood and the serum proved to be sterile. Injection of the albumose beneath the skin of the ear was followed by local inflammation and elevation of temperature, with loss in weight. Intravenous and intrathoracic injection of the organic acid was unattended with noteworthy disturbance. From pure cultures of the diplococcus in artificial media an albumose and an organic acid were obtained similar to those obtained from the blood, and exhibiting the same reactions when injected into a vein or the chest, or beneath the skin. It was found that animals treated cautiously with pure cultures were rendered immune. The same result could be secured by the employment of the toxin isolated either by evaporation or by precipitation with alcohol. Immunity was similarly conferred upon other animals by injection of the serum of animals thus rendered artificially immune.

Precocious Maturity.—Morse (*Archives of Pediatrics*, April, 1897, p. 241) reports the case of a female child that weighed fourteen pounds at birth and had large breasts and a little hair on the pubes, which at the age of two months had become considerable. At the age of nine months a bloody vaginal discharge was observed, and at this time the child weighed twenty-eight and one-half pounds. The discharge recurred at monthly intervals, increasing progressively in amount until it reached that observed in adults. At the age of 14½ months the girl presented the general appearance of a child of three years. With her clothing she weighed thirty-six pounds and her height was 32½ inches. The breasts were prominent and each contained a mass of glandular tissue as large as a pigeon's egg. The nipples were well developed and surrounded by a dark pink areola and a little hair. The mons veneris and the labia majora were large and covered with a profuse growth of hair. The labia majora were well differentiated and fairly large. The clitoris was distinct but not disproportionately large. The hymen was distinct and easily distensible. The vagina was distensible and contained rugæ, and the cervix was distinctly felt. From a study of this case and of those recorded in the

literature the conclusion is reached that precocious maturity is a physiologic congenital anomaly of development. Menstruation is never the first symptom, but is always preceded and accompanied by others. Menstruation most often appears in the first two years and is accompanied by ovulation. The attributes of maturity are not all acquired before the age of seven or eight years. Sexual desire is soon developed and pregnancy may occur early. Menstruation may continue as long as when it begins at the normal time. The etiology of precocious maturity is unknown and the relation to precocious menstruation is obscure. There is no medical treatment. As the mental development of the unfortunates afflicted with this condition is usually far less than the sexual and physical, they must be carefully guarded against voluntary or involuntary intercourse.

Removal of Tonsil, Floor of Mouth and Half of Tongue by External Pharyngotomy for Epithelioma.—Morton (*British Medical Journal*, March 27, 1897, p. 780) reports the case of a driver on a locomotive engine, 55 years old, who came under observation with a history of a "pricking soreness" at the back of the tongue and in the throat, which had been present for five weeks. He could swallow only liquids and these only on the left side, and with much pain and difficulty. Inspection of the interior of the mouth disclosed a hard, ulcerated, warty growth on the back of the right side of the tongue, involving also the floor of the mouth between the back of the tongue and the jaw and the junction of the tongue and the anterior pillar of the fauces and extending on to the tonsil. Only one enlarged submaxillary gland could be felt. When the patient was anesthetized a hard growth could be felt in the tongue, extending to the middle line, and the tip of the finger could just be passed behind it, down the pharynx. The trachea was first opened and a Hahn's cannula inserted, and later the lower part of the pharynx plugged with a sponge as well to prevent the entrance of blood during inspiration. The left lingual artery was then tied and the mouth on the right side opened exactly as in excision of the tongue by the method of Kocher, the right lingual artery being tied at the same time. Some enlarged submaxillary lymphatic glands were removed. The growth was found to have infiltrated deeply into the tongue toward the hyoid bone and the tongue had to be divided close above the great cornu and somewhat beyond the middle line, thus leaving rather less than half the organ. The cheek was then separated upward from the jaw just in front of the masseter and the jaw divided at the junction of the body with the ascending ramus, so that on traction outward of the latter the tonsillar region could be seen fairly well. The growth was fixed to the external pterygoid muscle, a portion of which also was removed. The pharyngeal wall, where infiltrated by the growth, was also adherent to the external carotid artery, but it was readily peeled off. The tongue was not separated from the tonsil and the diseased portion of the pharynx, but all were removed in one piece. The growth had not invaded the jaw, but the periosteum was stripped off with it. The jaw was wired at the end of the operation and the stump of the tongue sutured to the soft tissues on the inner side of the front of the jaw. The operation was rather a protracted one, but was followed by but little shock. The patient was nourished through a tube introduced into the stomach and left *in situ*. The mass of growth in the tongue was about the size of a walnut and of the typical hardness of epithelioma, of which also it presented the microscopic appearances. The tracheotomy tube was retained for ten days and the stomach tube for rather more than a month, but by firmly plugging the external opening into the pharynx the man could swallow fairly well three weeks after the operation. In the course of six weeks the opening in the neck had so far contracted as to just admit the end of the thumb, and five weeks later it was only a minute sinus. The man could now eat mince-meat and speak so as to be understood, and he had gained flesh to a considerable extent. Four months after the operation the sinus in the neck was closed and the man returned to his work. There had been no sign of recurrence seven months after the operation.

Typhoid Fever in Infancy.—Dr. W. P. Northrup, in the *Albany Medical Annals*, March, takes for his thesis the position that typhoid fever is a rare affection in infancy. He says: At the New York Foundling Hospital, in twenty-five years, there is no record or remembrance of a case. This statement is made on the authority of Drs. O'Dwyer and J. Lewis Smith. In my own experience of fourteen years at the same institution, clinically, no case has been seen. I may add that from my first entrance into the service, Dr. O'Dwyer and myself have been literally looking for it. Furthermore, in 2,000 necropsies upon subjects under three years of age, for which statement I am personally responsible, no typhoid fever was verified. Of the 1,800 infants and children usually under the care of the institution, 1,100 are out at nurse in the environs of New York, Staten Island, Hoboken, Jersey City, Westchester County, Astoria, Williamsburg, Long Island City and intervening points, beside the crowded parts of New York and Brooklyn. All these are under three years, and a majority under two years. For the most part the food of these children is milk and water. Above the first year probably the milk is not warmed, to say nothing of boiling. Children drink copiously of water. There have been now 25,000 infants from the Foundling Hospital living about among the community and no case has returned with recognizable typhoid. They are not specially protected, but rather unusually exposed. Let it be remembered, too, in this connection, that our large hospitals receive their full typhoid crop of adults from just these localities, not a few of them finding their way to my own service at the Presbyterian Hospital. A child over one year old will receive from her ten dollar-a-month nurse many delicacies, but the milk will be the main feeding, and that milk will often be procured at the corner grocery. Corner-grocery milk is almost a by-word for unreliability. After watching for twelve to fourteen years for a case of sporadic typhoid in infancy, I entered into an investigation with other institutions. I will refer to one. The New York Infant Asylum in eight years has not had a case of typhoid, 10,000 cases of illness having been observed in that time and 700 autopsies made (Holt). From the experiences of the New York Foundling Hospital and the New York Infant Asylum the statement seems justified that typhoid fever in the first two years of life is rare. On the other hand, in the presence of overwhelming infection (over-abundance of virulent bacilli in long continued contact), an infant, though naturally little vulnerable, may succumb to the epidemic infection. In the Stamford (Connecticut) epidemic, in which 406 individuals were attacked, I saw four infants sick of undoubted typhoid; 4 in 406. One was 13 months old, one of three in a household of four attacked, all having typical typhoid. The manifestations in this infant were fever, prostration, dry tongue, pallor, characteristic eruption, feelable spleen. One was 16 months, two were 22 months; of the latter age one died early in the disease with broncho-pneumonia. This is the only autopsy on a typhoid patient under two years of age I have ever made or have seen. It will be urged that the unusually careful management of milk designed for infants, its warming and sometimes its boiling, have much to do with the rarity in this period of typhoid. That may be true. Infants under one year are largely wet-nursed, too. Above one year I think it is the experience of most that the infant is given largely unboiled milk; they prefer it and are considered large enough to take it. Especially is this so in the associations from which the above experience has been gathered. Here is a chance, says Dr. Northrup, to make use of the newly discovered method of exact fever diagnosis, namely, the agglutinative serum test. If, and when this test shall have been applied, he expects that our Baltimorean and other experts in fever will find it expedient to revise their assertions as to the vulnerability of the human subject to typhoid fever in the first two years of life; except perhaps in times of epidemic prevalence with a superabundant and virulent contagium, such as the comparatively immune (if so let such immunity be demonstrated) constitution of the infant can not withstand or overcome.

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SATURDAY, MAY 1, 1897.

MEDICAL LEGISLATION IN 1897.

The progress of so-called medical legislation in the year 1897 has not been pleasant in many particulars. The Department of Health Bill in Congress has not been reported. Medical bills in New Hampshire have not been acted on. In Missouri we believe the osteopathy bill was slaughtered, but in Illinois the same bill, one of the most objectionable that could be offered, has passed its second reading, and there is great danger of its ultimately becoming a law. This curious measure is entitled "A Bill for an Act declaring the treatment of diseases of the human body by the system, method or science commonly known as osteopathy, and as taught and practiced by the American School of Osteopathy of Kirksville, Mo., not to be the practice of medicine within the meaning of section ten (10) of an act entitled 'An act to regulate the practice of medicine in the State of Illinois,' etc." This interesting bill recognizes the American "School of Osteopathy" of Kirksville, Mo., which is the only attempted recognition of an individual medical school in the statutes. An amendment in the senate committee erased the words "as taught and practiced at Kirksville, Mo."

In Michigan a bill, which gives color to the existence of the most objectionable forms of quackery, has been introduced, and curiously enough is supported by one wing of the profession who think anything better than nothing. Dr. MACLEAN, of Detroit, and his associates have been doing valiant work in attempting to defeat this bill, but the result is not yet definitely decided.

In Delaware the opticians have a bill, which is doubtless likely to pass, creating the degrees of Graduate Optician and Doctor of Refractions; the effect of which is to do away with the services of the oculist.

In Iowa the Practice of Medicine Act has passed.

In Wisconsin the Practice Act will probably pass.

Taking it altogether, we are of opinion that in the matter of legislation, Illinois bids fair to become worse than any State in the Union. Every quack in the State it is said, has "put up" his money to secure the passage of the "osteopathy" bill; while the bill of the Illinois State Medical Society, drawn with care and backed by the most able and respectable practitioners in the State, was strangled in committee.

We once more advise our brethern to take a part in political conventions and primaries, sufficiently active to become known to the lawmakers.

RHEUMATIC PERINEURITIS.

Of the nature of the causative agent of the group of symptoms that we are accustomed to designate acute rheumatism we have as yet little definite knowledge, although it is generally believed that they are dependent upon the presence in the blood of some toxic substance or substances, perhaps lactic acid, perhaps products of bacterial activity. In some cases microörganisms have been found to which specific etiologic qualities have been attributed, but the data of this kind are not yet sufficient to justify a final conclusion in the matter.

It seems probable that so-called acute rheumatism is of multiple etiology or that it occurs in several different forms. In favor of this fact the occurrence of arthritides, with or without pronounced constitutional manifestations and serious complications, in connection with a number of infectious diseases, *e. g.*, syphilis, gonorrhea, scarlatina, smallpox, would seem to constitute weighty evidence.

Whether so-called muscular rheumatism represents an attenuation of the rheumatic intoxication or a distinct affection, must for the present remain an open question. Myalgia may arise from a variety of causes, toxic and otherwise, and the rheumatic poison may naturally be responsible for some cases.

The involvement of the serous membranes other than the articular synovial sacs in a considerable proportion of cases of acute rheumatism must be looked upon as a manifestation of the activity of the primary cause of the disease rather than as a complication of the articular affection. That under the conditions thus briefly pointed out the nervous system sometimes suffers, should occasion no surprise, and it is probable that the cerebral symptoms not rarely observed represent a manifestation of such involvement.

That the peripheral nerves also are sometimes affected, is pointed out in a recent contribution to this subject by STEINER (*Deutsches Archiv für klinische Medicin*, B. 58, H. 2, 3, p. 237), who from a study of a considerable number of cases of acute rheumatism in the Wieden Hospital of Vienna arrives at the conclusion that in this disease the perineurium, like the serous membranes, is often the seat of inflammation, and not as a secondary manifestation from contiguity to an affected joint, but rather as a common effect of the primary cause. This perineuritis may run a course parallel with that of the affected joint or it may be the more conspicuous manifestation. It may attend mild cases, as well as those of severe degree; and it may develop before the joint affection, at its height or during its decline. While age and the general condition appear to be without predisposing influence, females seem to suffer rather more commonly than males. Good therapeutic results may be secured under these conditions by conjoining potassium iodid with sodium salicylate in efficient dosage. Ringing in the ears may be overcome by the use of ergot. If pain be severe the coal-tar analgesics may be administered. The treatment may have to be continued for a long period of time. When the heart is sound hot baths followed by hot packs may render excellent service.

THE MONTREAL MEETING OF THE BRITISH MEDICAL ASSOCIATION.

The Canadian committee of arrangements for this meeting have already manifested an alarm that is grotesque, in supposing an invasion of American physicians would destroy the honor and dignity of this Association meeting.

In their frantic efforts to prevent this they have secured the services of the *Medical Record*, who urges all persons not specially invited to stay away. Then, as if they doubted the personal influence of the *Record*, they send to other journals a circular letter explaining that a few noted persons are to be invited, and that they are quite unable to accommodate the others. The committee evidently have a very limited knowledge of medical gatherings and are following the counsel of still more limited intelligence. The attempt to discourage the attendance of physicians from the United States is both a psychologic and business blunder. The effort to invite a few leading men and thus discriminate outside the members of the Association is unfortunate, unless very discreetly carried out, and confined to men who have clearly won the title of leaders by original work. The assumption that any great number of physicians would be anxious to attend this meeting, because it was the British Medical Association is pure "anglomania." The average medical man of the United States is familiar with society gatherings and is not likely to go far from home among strangers as a mere visitor. Few medical men, comparatively, attend their own medical and national conventions, even when near at home, and it would require something very unusual to attract any large number to Montreal. If the committee had been wisely counseled they would have gone on quietly providing for the members first, then arranged for new members and members by invitation, who could, on the payment of a certain fee, be admitted to all the meetings. This would have brought in a good revenue, and a number of colonial members, materially increasing the power and usefulness of the society. Should the sections become crowded with papers, cut off all discussion and confine the readers to five or ten minutes time for reading. There would be no confusion, no unwieldy crowds, and all who had paid would be entitled to join in the festivities. Those who had not paid could look on as strangers, free and independent. Under any circumstances, not more than two or three hundred persons would have come from the States, and the most of these would have been listeners and sight-seekers.

Of course our Canadian cousins may be a little nervous, and being unfamiliar with such entertainments have some fears of the presence of too many plebeians from the States. The idea of suggesting that only those who are invited should come is childish in the extreme. It assumes that this Association is the great close medical corporation of the world, and that the American physicians are suffering for a chance to be present at the meeting. Also, should they come they would be unable to control them, and these physicians are in manners coarse, lawless and undesirable. There are about thirty members in the States, who are entitled to participate in the meeting, as they belong to the British Medical Association, and certainly less than a third of those will attend, and why the committee should be alarmed at the presence of those who are not members is unexplainable. It is certainly a reflection on the honor and culture of the medical men of the United States to ask them to stay away before any expression of voluntary attendance has been manifested. The zeal of the *Record* is alike offensive in supporting such an absurd position. The British Medical Association, like our ASSOCIATION, should be free and independent, and its management should be capable of controling any crowd of members and visitors who may come. Every Section should be independent to adapt itself to the conditions of the meeting. The Montreal committee are not making their duties less, nor winning respect from the profession by sending out vaguely worded circulars to keep people away, even from the States. While the profession at large have only general interest in this Association meeting, it seems lamentable that any journals in the States should notice, or even publish any letters conveying

the morbid fears of the committee, which to say the least are implied insults to the honor of the profession. The Montreal meeting should be a most notable event in the medical history of the year, but it should be managed as all other meetings of physicians are, and as it is always managed when it meets in England, that is, on broad scientific and business principles. It should be for the members alone and invited guests and the presence of a crowd of visitors and listeners should never create the slightest apprehension, but rather be considered as a compliment. A wise committee would seek to enlarge the membership from this crowd and not repel them, but impress upon them the value and need of belonging to such an association.

THE INFLUENCE OF HIGH ALTITUDE IN AGGRAVATING SURGICAL SHOCK.

From a consideration of the relation between high altitude and surgical shock WETHERILL (*Annals of Surgery*, April, 1897, p. 430) recommends in the performance of surgical operations, and under conditions of surgical shock generally, the patient should be spared the loss of every drop of blood possible. The importance of this precaution increases greatly as higher elevations are reached and the atmospheric pressure is correspondingly diminished. Anemic and exsanguinated patients are more susceptible to surgical shock at high altitudes than at sea-levels, and must be more carefully prepared for operations; extra precautions against shock must be observed both at the operation and afterward. Increasing shock after injuries or operations must be construed as strong presumptive evidence of continuing hemorrhage. It must be made clear that there is no hemorrhage before the ordinary remedies (cardiac stimulants, transfusion, etc.) are employed. The reflex effect of oozing is to cause a continuation of shock, which must be regarded as conservative in its tendencies while bleeding is still going on. In treating shock after surgical operations or injuries, the first and most important point is to arrest completely all further loss of blood. The depleted vessels should then be supplied by some means with an increased volume of fluid at a high temperature for the heart and blood vessels to contract upon, so that the circulation and the blood-pressure may be speedily reëstablished. In abdominal operations this may be effected by leaving a large quantity of hot salt water in the abdominal cavity; or the abdomen may be opened afterward and the fluid introduced, thus securing at once the application of heat to the great abdominal nerve centers, as well as the mechanical pressure and support of a large volume of fluid upon which the abdominal viscera may contract, and thereby restoring to a degree the intra-abdominal pressure, as well as supplying water for absorption into the circulation. The sustained Trendelenburg position is, for obvious reasons, an important accessory. Diffusible and cardiac stimulants, with heat to the surface, and all other means for the reëstablishment of the circulation in its full force and volume, may now be freely employed. Natives and thoroughly acclimated persons are not as susceptible to the greater surgical shock in the higher altitudes as are others; long residence and the gradual compensatory changes in blood pressure, in vaso-motor action and in muscular support of the blood vessels, having adapted them in a great measure to the lighter atmospheric pressure and to the conditions incident to this. Surgical operations upon unacclimated persons from lower altitudes, and those that involve much loss of blood, are fraught with more risk from shock as the altitude is increased, and extra precautions for its prevention are imperative with such patients. This being borne in mind, and proper precautions being observed in the preparation of patients at the time of operation and afterward, as good results may be expected at high as at lower altitudes. In surgical shock at high altitudes every means should be used for the prevention of shock through the nervous system and the resultant blood-stasis, *i. e.*, the surface heat should be preserved, time in operating should be saved, exposure and unnecessary handling of the patient's viscera should be avoided, etc.

A MILITARY PATHOLOGIC PROBLEM.

The editorials in several of our English contemporaries within the past few weeks on the subject of the apparently growing evil of venereal infection in the British army are interesting if not altogether satisfactory reading. It appears that the average number actually *hors du combat*, as one might say, out of the seventy thousand Europeans in the military service in India, from venereal diseases is nearly nine thousand, certainly a very large figure when we consider that it necessarily does not include those still suffering from the later less disabling manifestations of the disorder. An average number of forty-five soldiers to every thousand are constantly in the hospital and this of course only includes the most severe types of the disorder, not those who can still do some duty though possibly still unfit for active field service. The ratio of hospital admissions per year for these affections was, taking the mean for three years, in the British Indian army, 438 per thousand. Comparing this with the figures for other European armies the magnitude of the evil is the more manifest—the comparative statistics for Germany being 27.3, Russia 43, France 43.8 each per thousand. In some Indian cantonments it would seem the annual hospital admissions for this cause exceeded in number the whole strength of the garrison, in Cawnpore, for example, with a force of 902 the hospital admissions were 967 in 1895. There appears to be no doubt but that there has been a very pronounced increase within the last year or

two; in 1895 especially when venereal disease attacked the British army to an altogether unprecedented extent. It is naively said in the report of the Departmental Committee appointed to consider the question of this prevalence, that this state of affairs does not appear to be attributable to increased immorality in the army, for drunkenness and crime have decreased and the soldier is more than ever surrounded by social and educational civilizing influences. The opinion of our British confrères appears to be that the remedy for this deplorable state of affairs is in the reënactment of the contagious diseases acts as applied to these disorders. Under former conditions the enforcement of these was, if one is not mistaken, accompanied by some rather objectionable features, such as the *quasi* enlistment of native women as recognized camp or barrack prostitutes, and a possibly harsh and indiscriminating system of personal inspection. It is unreasonable, however, that the reaction against measures that thus outraged public conscience should go so far as to disable the army authorities from exercising in a humane and decent way some sanitary jurisdiction in this particular direction. Simply placing venereal diseases in the same category as other infectious diseases, and requiring their reporting and if needed their isolation whenever their active existence becomes known to the authorities, and this would be a legitimate sanitary regulation, ought to go far to diminish the evil, and if properly carried out it need offend no one's moral or esthetic sensibilities. That this is not done seems a little remarkable, considering these facts.

There is another point of view from which the subject can be considered, and that is the real national peril from the present condition of affairs. According to a report made to the Royal College of Physicians, out of some thirteen thousand soldiers returning from India in 1894 over 60 per cent. were infected, many of them with the most virulent type of syphilis. The average number of hospital admissions in the British home forces, 203.7 per thousand, is over four times that of the continental European armies, and this difference is probably largely due to the influence of the Indian service. The large number of short-service men returning to civil life must be a serious peril to the community and the continuous existence of so badly infected a body of young and reckless men, though presumably under discipline that should be capable of exercising some restraint upon their spreading their diseases, is a source of constant danger. With such facts known, moreover, the soldier is degraded in the public estimation and the *morale* of the army must be affected to some extent together with its morals. ORTHERIS and MULVANEY are picturesque in fiction, but their attractiveness is marred if we consider them in the light of these revelations.

In this country we have but a small standing army and even were its condition as bad as is that of the British force, which is not the case, the matter would be less serious. But the time may come when we will be compelled to occupy and garrison outlying and tropical territories and have large detachments constantly in service in such regions. Then it will be well if our military sanitarians take a lesson from the experience of those of Great Britain and avoid their mistakes and their misfortunes. In the present showing by the English medical publications, the condition of the British army is reminiscent of the military experiences of the sixteenth century—the history of the siege of Naples and an incident of that of Madrid, as given by D'ISRAELI in his "Curiosities of Literature." War in all its aspects is an evil even when it is a necessary one, and it is attended with many other evils, some of which like the one here discussed, ought to be more or less avoidable. While the demoralizing influences in time of peace of army life should be reduced to a minimum by every possible means, it is due to the community in general that every reasonable measure should be taken to make the soldier and the ex-soldier less formidable in a pathologic point of view.

THE PHILADELPHIA MEETING.

It is hardly necessary to remind our readers of the unusual interest which will center in the coming meeting at Philadelphia. Already the arrangements are so far completed as to indicate, not only an unusual number of excellent papers, but a large attendance of leading physicians from all parts of the country. The sneering criticism of a few dyspeptics, and the far-off cries of those who have fallen back in the march, are still heard. The committee of arrangements have gone on quietly arranging for at least five thousand persons including visitors and sight-seekers and all their aunts, uncles and cousins. While the meeting is exclusively for members and invited guests, there is no alarm or morbid fears of being overwhelmed with the crowds. No letters are written to medical editors for publication, advising medical men to stay away, as not welcome. On the contrary, every effort is made to induce physicians and their families from all parts of the country to come and enjoy the occasion. Even the belated no-code men of New York, and the deserters and the frantic critics, and all prodigals from their father's house are urged and most cordially invited to come back and help us celebrate this coming half century of our existence. It should be a pleasure as well as a duty to come out and hear what the leaders and the great army of the profession are thinking and writing about. Every physician has a personal interest in the many new questions of medicine which are coming up with greater frequency every year. He can not understand these topics from the printed page, he must hear them from

the authors and teachers personally. He must see the men and have their voices to catch the inspiration of the themes. The colleges and teachers of Philadelphia have opened their doors for clinical lectures for a week or more before and after the meeting, to enable all who would like to become familiar with Philadelphia methods of treatment in the clinics and hospitals. This will give every medical man some practical returns for his time, and make the occasion a most memorable one. Every member of the ASSOCIATION should take pains to invite his medical neighbors to attend this meeting, and become members of the ASSOCIATION, and every member should rejoice at the opportunity to break away from every day life, and mingle with others who have similar interests and tastes with himself. There are no more important and enjoyable occasions in the professional lives of the medical man than these National gatherings.

Questions of codes and of management, and efforts to win its honors, are all healthy signs of progress and movement, and give the scientific side of the meetings caste and clearness not to be found in dull mutual admiration societies of local growth. The annual meetings are becoming more and more important scientifically every year. Many of the best and most advanced studies of modern medicine are presented in the papers read. This is amply confirmed by any examination of the pages of the JOURNAL for the past year. That this is true is still further confirmed by the fact of the increasing frequency of quotation from this JOURNAL by foreign authors and medical journals. The oft-repeated comments by smart medical journals, that the meetings were not up to the average in the quality and vigor of papers, are very often signally disproved by the frequent republications of its papers, and generous quotations by authors and medical works. The authors of papers should remember that the JOURNAL has won a place among the great publications of the world, and its readers are not confined to this country alone, but every section of the globe where medical science is studied, is reached by its weekly issues. Hence, authors should be more careful in the construction and style of their studies and conclusions. Often the excellence of a paper is marred by obscurity of style and expression, and the necessity of being clear and concise is apparent to all readers. The JOURNAL should have better prepared papers than ever before. Its representative character clearly requires it, and every writer should feel that this part of his paper should have the same careful attention and study that is given to the thought conveyed. A glance at the advanced publication of the program in the JOURNAL, giving the titles of the papers to be read, is sufficient to show the character of the coming meeting. The Section dinner is a new feature which will bring increasing interest to each one in a closer acquaintance with others of the same special line of work. In this way one of the strongest means of sustaining scientific work is used and the narrowness and personality is widened, and workers along the same lines are able to better use and judge of the work of others. The more closely the members are brought together, the less friction and antagonism will exist. Philadelphia is an ideal city to meet in, its quiet atmosphere and great hospitals and colleges, and strong leading medical men, make it a very desirable place to visit. The committee of arrangements will have all the business details so complete that each one can enjoy all the meetings, general and sectional, without any confusion or crowding. Again we urge every one to come and show their interest in American medicine, and in the great evolutionary movement upward to higher and wider conceptions of science and its relations to every-day life.

THE PASSING OF KERR.

The medical profession of Chicago congratulate themselves that at last the layman who drew a salary of five thousand dollars a year, for attending the office occasionally and signing his name as Health Commissioner to documents drawn by Dr. REILLY, has been relegated to the purlieus of his ward, and that Dr. ARTHUR R. REYNOLDS has been reappointed to the same office from which KERR unjustly ousted him.

Many do not admire the general outcome of the city election, but this feature of it is as welcome as the flowers of Spring.

THE JOURNAL SPECIAL TRAIN.

Medical gentlemen from Illinois and vicinity, the Pacific Coast and the Northwest, who intend to be present at the great jubilee meeting of the ASSOCIATION, are invited to go by the JOURNAL SPECIAL, which will go by the Pennsylvania Railway without change from Chicago to Philadelphia. See their advertisement in another column.

CORRESPONDENCE.

A Basis for Medical Statistics.

CHICAGO, ILL., April 24, 1897.

To the Editor:—German medical papers have recently published a number of articles on puerperal morbidity based on statistics of hospitals in Berlin, Dresden, Marburg and other cities. The value of these statistics is much lessened by the knowledge that the investigators had not worked on similar lines or according to uniform methods. Some quoted rectal temperatures; others used the axilla. There was not a complete agreement as to the physiologic limit of temperature, though most of the investigators properly considered any rise above 38 degrees C. as pathologic. It was further noticed that considerable variation in the percentage of puerperal fevers occurred in the tables based on the readings of the thermometer by nurses and on those by the physician. Koblanch of Berlin, took the axillary temperature of patients during the last seven months of the period of eight years for which his

table was compiled. He got 27 per cent. of puerperal fevers, while during the preceding years the percentage was 10.

If such defects occur in hospital work, how much worse must the case be in general practice and in municipal statistics! Indeed it is practically impossible to compare the statistics of different cities because there is no uniform classification of diseases used by the health authorities of those cities. Even in the annual reports of a single city, one will frequently find much contradiction between the tables published. This shows that even in a single health office there may be an absence of clear and definite ideas as to classification. In this connection it may be mentioned that Dr. Heckard, the registrar of the Chicago Health department, has already set on foot a movement to bring about uniformity in classification of diseases in all the large American cities.

I would suggest that the AMERICAN MEDICAL ASSOCIATION should at its coming meeting appoint a Committee on Statistics, the duty of which should be to outline a basis for the compilation of reliable medical statistics. It should not only coöperate with Dr. Heckard's efforts in the field of municipal statistics but should endeavor to bring about harmony and thoroughness of statistical work in the wider domain of medical science.

The following scheme might be followed:

1. Municipal statistics of vitality, morbidity and mortality.
   a. Agreement as to classification of diseases.
   b. Reports of birth, diseases and deaths; compulsory by penalties; paid for by fees (as in Masschusetts and New York); or resulting from the education of a sense of civic duty among the public and the medical profession.
2. Hospital statistics, in which the German reports mentioned above show that there is ample room for improvement.
3. Private statistics. Uncertainty of diagnosis is the chief cause detracting from the value of statistics derived from private practice. Hence they should be divided into two large groups:
   a. Verified, either by postmortem examination or by scientific investigation (microscopic or bacteriologic).
   b. Non-verified, which represents what are now commonly called "medical statistics," being tables of judgments based on mere clinical grounds or often on simple guesses.

In all compilations, the class of verified diagnoses should be kept widely distinct from the class of non-verified cases.

A committee working on these or similar lines could formulate rules which would guide the profession to make clear and useful reports about cases; it would be a center point to which suggestions on this subject could be sent; and it would eventually, I believe, bring order into a field which is now mere chaos.

DAVID JESSUP DOHERTY, M.D.

The Eyes and School Work.

CARLINVILLE, ILL., April 24, 1897.

To the Editor:—When my friend and classmate, Dr. A. C. Simonton of San Jose, Cal., in his reference to the character of the paper the JOURNAL should be printed on said, "we as sanitarians and hygienists ought to practice what we preach," I am inclined to offer the following, which was issued by me by request, as a leaflet to the school teachers in my vicinity in reply to a newspaper query, as my contribution as a member of the Section on Ophthalmology, to which you refer the matter. While it deals with the character of the paper the JOURNAL should be printed on, it does also with much other matter germane; as to the mere tint of the paper, the Doctor is theoretically correct. Yet I think my preference is largely an idiosyncrasy or personal equation; I would prefer blue. White is best for all. "With your permission I will answer your queries of last week: 'Why should so many school children wear glasses? Is it because of bad light, or bad atmosphere, or bad print in text books, or inherited weakness, or is the race becoming blind?' To which I will add, or is it an increasing demand made on the children for eye work, and a knowledge that relief from its pains may be enjoyed by their assistance?

"I think the queries very pertinent, and I am satisfied many children, teachers and parents will compliment you for asking the questions. Bad or imperfect light requires an increase of the visual effort and contributes to eye tire, worry and exhaustion, for in all eyes vision at the near or reading point is a voluntary muscular effort. With bad light and small print, and fine lines in geography and other branches of study, the objects to be seen distinctly must be looked at longer. The length of time of steady fixation necessary, causes fatigue of muscles, nerve and retina, in which the object seems to change its color and fade. Therefore, the light of school rooms should be as perfect daylight as the confining walls will permit, and admitted so the pupils may have the greatest advantage over its imperfections.

"The print of the school books ought to be like this, at least as large as No. 10 Pica, or 12 English—black and well leaded, so the lines are twice the length of the short letters apart, and the letters should be a little wider apart than the width of the bar of the letters, to be read with ease 12 or 15 inches. The paper should be smooth but not glossy.

"Will publishers of journals, newspapers] and magazines please take heed.

"The blackboards ought to be a clean black, not gray with chalk, and all work put on them should be so large that the area of each letter will cover at least the square of an angle of five minutes and the area of a square of the bar of the letter, at least a square of the angle of one minute for the distance of the scholar who is to view it. For the distance of one hundred feet the greater area is about two inches square—four square inches—and the lesser area three-eighths of an inch square; for seventy feet, 1¼ and ¼; fifty feet, 1 and 3-16; forty, ¾ and ⅛; thirty, 9-16, and 1-10; twenty, 6-16, and 1-16. Divide the square of the greater angle into twenty-five equal squares and you will have the relative size of the two. The spaces between the bars and letters should also be equal to the lesser, or one-fifth the greater area.

"Bad atmosphere, want of ventilation, is enervating and impairs muscular tonicity, so necessary to keep up eye tension for acute visual purposes. But with all possible care on these points many eyes will be sacrificed by the increasing demands on children of today for mere literary attainments.

"The eye work required of children now is double if not treble what it was twenty or thirty years ago, and the clamor of all is yet for a higher grade at a tender age.

"In the class of what you would call inherited weakness we find our earliest wrecks.

"There are three different conditions of the refractive apparatus of the eye that constitute this class of weakness. I refer to the conditions of myopia, hyperopia and astigmatism. These three errors of the refractive apparatus of eyes are susceptible of many different degrees and varieties of combination, and when either exists it places the eye at a corresponding disadvantage, and precipitates sooner or later a failure of clear and comfortable vision. When the error is corrected it restores clear and comfortable vision and places the eye again at an advantage.

"Now, when amid the conditions of bad light, bad air, bad print on glossy paper, and overwork, we find a child pained with headache, red eyes, eye ache, nervous, and can not fulfill

the requirements of school with comfort, we search for an error of refraction, which if found, is corrected, if need be, with glasses. Again, the fact that very many children and adults have a greater or less amount of some one or more of these errors, and when rendered uncomfortable by it the knowledge that comfort and its privileges can be enjoyed by its correction with a pair of specially arranged glasses, it need not be wondered that many will wear them." A. C. CORR, M.D.

The Osteopathy Bill.

(COPY)

CHICAGO, April 26, 1897.

DEAR SENATOR GRANGER:—I have looked over the Osteopathy Bill, as introduced by you, and do not know what arguments were brought to bear upon you to father it, but the Bill is one which will be very unjust to the medical profession in this State, if allowed to pass; besides, it would make the State the dumping ground for quacks.

Personally, I would be very pleased to hear that you will quietly pocket the bill, or do something to stop its passage.

I am faithfully yours,

Senator Flavel K. Granger, JOHN B. HAMILTON, M.D.
Illinois Senate, Springfield, Ill.

ILLINOIS STATE SENATE,
SPRINGFIELD, April 27, 1897.

JOHN B. HAMILTON, M.D., Chicago:—Yours of 26 inst., was received by this morning's mail. My bill exempting graduates of schools of osteopathy from the requirements of the medical act, was passed by the Senate without opposition. The amended bill to the present act, perfected by the medical schools of the State, now lies in committee, without any friends to support it. So I conclude my bill is in touch with the public demand, and further medical restrictions are not looked upon favorably. Hoping your fears as to being overrun with quacks may not be realized, I am

Yours very truly, F. K. GRANGER.

Railroad Rates.

HYANNIS, MASS., April 17, 1897.

To the Editor:—Please state in the next issue of the JOURNAL for the benefit of the members residing east of the Mississippi, and especially in New York State and in the New England States, which railways in those sections have granted members and their families, who intend to attend the "grand jubilee meeting" of the ASSOCIATION, reduced rates and what procedure is necessary to obtain such privilege?

Very truly yours, ALBERT PICK.

ANSWER: We understand that all railways in the United States have agreed to a rate of one and one-third fare for the round trip.

PUBLIC HEALTH.

Preventive Inoculations of Bubonic Plague.—Only 4 of the 2,000 persons inoculated by Haffkine to March 4, have been attacked by the disease, according to a statement in the *Semaine Méd.*, March 24.

A Few Cases of Smallpox.—Twenty cases in all have occurred in New York City since March 1, nine of which have been removed from Randall's Island Asylum and schools. The first cases seem to have had no history.

The School as a Focus of Contagion.—The last report of the school inspectors in New York City report that out of 3,913 children examined, 258 were excluded. There were found besides seven cases of measles, five of diphtheria, one of scarlet fever, thirty-one contagious eye diseases, and 169 parasitic diseases of the head, while mumps, whooping-cough and chicken-pox contributed in a minor degree to the sum total of the disqualifications for attendance.

Inoculations with Rinderpest.—Professor Koch, who has been studying the rinderpest in South Africa, announces that the results obtained with serum inoculations confer immunity to such an extent that he is convinced that thousands of cattle can be saved every day by their means. He has inaugurated a course at Kimberley, Cape Colony, to instruct others in his methods.

The Bubonic Plague in Bombay.—The latest advices bring the cheerful intelligence that the plague is abating in virulence, and that the refugees are beginning to return to the Presidency. Thus far, however, the mortality has not declined below 50 per cent. Haffkine's serum claims better results than that of Yersin's, at least so says a telegram to the London *Lancet*.

A Death from Yellow Fever in New York Harbor.—A young naturalist died from yellow fever in the Swinburne Island Hospital April 22. He was a passenger by the Columbian Line steamer *Finance* from Colon, and belonged to a party of naturalists sent out by the Frank Blake Webster Company, of Hyde Park, Mass. They stranded in Central America and he was compelled to dispose of part of his effects at Panama in order to pay his passage home. Yellow fever having been reported at Colon, Dr. Doty, as a precaution decided to remove the sick man to the hospital. After the room on board the steamer had been disinfected she was allowed to go to her pier. The corpse remained on the island.

The Milk Typhoid Epidemic at Kirkcaldy, Scotland.—In the report bearing on the late typhoid epidemic at that place, recently submitted by Sir Henry Littlejohn of Edinburgh, he states that in this epidemic just brought to a close there were 193 cases, with a mortality of 20, or 10.4 per cent. The origin of the outbreak was, in his opinion, clearly traced to a dairy. The Kirkcaldy town council have awarded to Dr. Mackay, medical officer of health, and Dr. Curror, 100 pounds each, and Mr. Braid, sanitary inspector, 50 pounds, for the services rendered by them during the epidemic. Sir Henry Littlejohn, in his report, highly praises the ability and energy displayed by Dr. Mackay in coping with the epidemic.—*British Medical Journal.*

Inspection of American Meat Supply to Great Britain.—Dr. P. H. Bryce, Secretary of the Ontario Board of Health, has issued a pamphlet regarding the meat supply that is exported to Great Britain. The importance of full information on this subject is apparent when it is stated that during nine months in 1896, England received 436,223 cattle, of which the United States sent 308,159, and Canada 71,670; while the bacon from the United States during the same nine months amounted to 207,000,000 pounds. In 1896 the legislature of Ontario passed "An Act for the Inspection of Meat and Milk Supplies in Cities and Towns," empowering municipal councils to establish public slaughter houses and authorizing local boards of health to take measures for ascertaining the purity of public milk supplies and the general health of the cows; local boards are further authorized to provide for the testing of every such cow with tuberculin by a veterinary surgeon. Councils or boards availing themselves of the powers conferred by the act are required by it to conform to the regulations in that behalf from time to time adopted by the provincial board of health, and, with a view to encouraging the introduction of meat and milk inspection, the provincial board has now published a description of a slaughter house suitable for a town population of 5,000 persons, together with a plan, an elevation and an estimate of cost. In the testing of cows with tuberculin "a 10 per cent. solution of normal tuberculin is to be injected to the amount of from one to four cubic centimeters according to age of animal. . . . . The temperature must thereafter be taken regularly every three hours for a period of

from twelve to fifteen hours. . . . . Any notable rise of temperature indicates the existence of tuberculosis." Cows that give the tuberculin reaction, if they are wasting and show clinical signs of lung disease, shall be destroyed and the carcasses safely disposed of; but if they are in fair condition, they may be either fattened as speedily as possible for slaughter, or their milk, after boiling for half an hour, may be given to pigs or calves. The pamphlet concludes with a description of the inspection of meat at Buffalo. Returning to the inspection of cattle intended for the wholesale trade or export, they are inspected individually, and if found healthy to outward appearance they have a metal tag punched into the ear bearing a number of a continuous series, and a detailed statement of the numbers in any given lot is daily made and forwarded to the central bureau at Washington; also a note of any animals condemned, stating cause. These animals tagged as inspected are admitted to interstate trade, but if for export, are again inspected before going on board ship. So complete is the system of registration that, as an inspector in the Deptford market, London, stated to a Canadian friend, "The Americans are quite surpassing you Canadians, for we can trace any animal found diseased by that tag back to the very farm it may have come from in the Western States. We are getting afraid of your Canadian cattle." The quarantined animals at the yards are further examined, and if proved diseased on killing are all *tanked*, as the expression is. This work is being extended to the investigation and stamping out of tuberculosis and actinomycosis by inspection of herds. The latter must necessarily be largely carried out by State authorities.

NEW INSTRUMENTS.

AN IMPROVED PORTABLE STERILIZER FOR SURGICAL INSTRUMENTS AND DRESSINGS.

HORACE G. WETHERILL, M.D.
PROFESSSOR GYNECOLOGY, UNIVERSITY OF DENVER, DENVER, COLO.

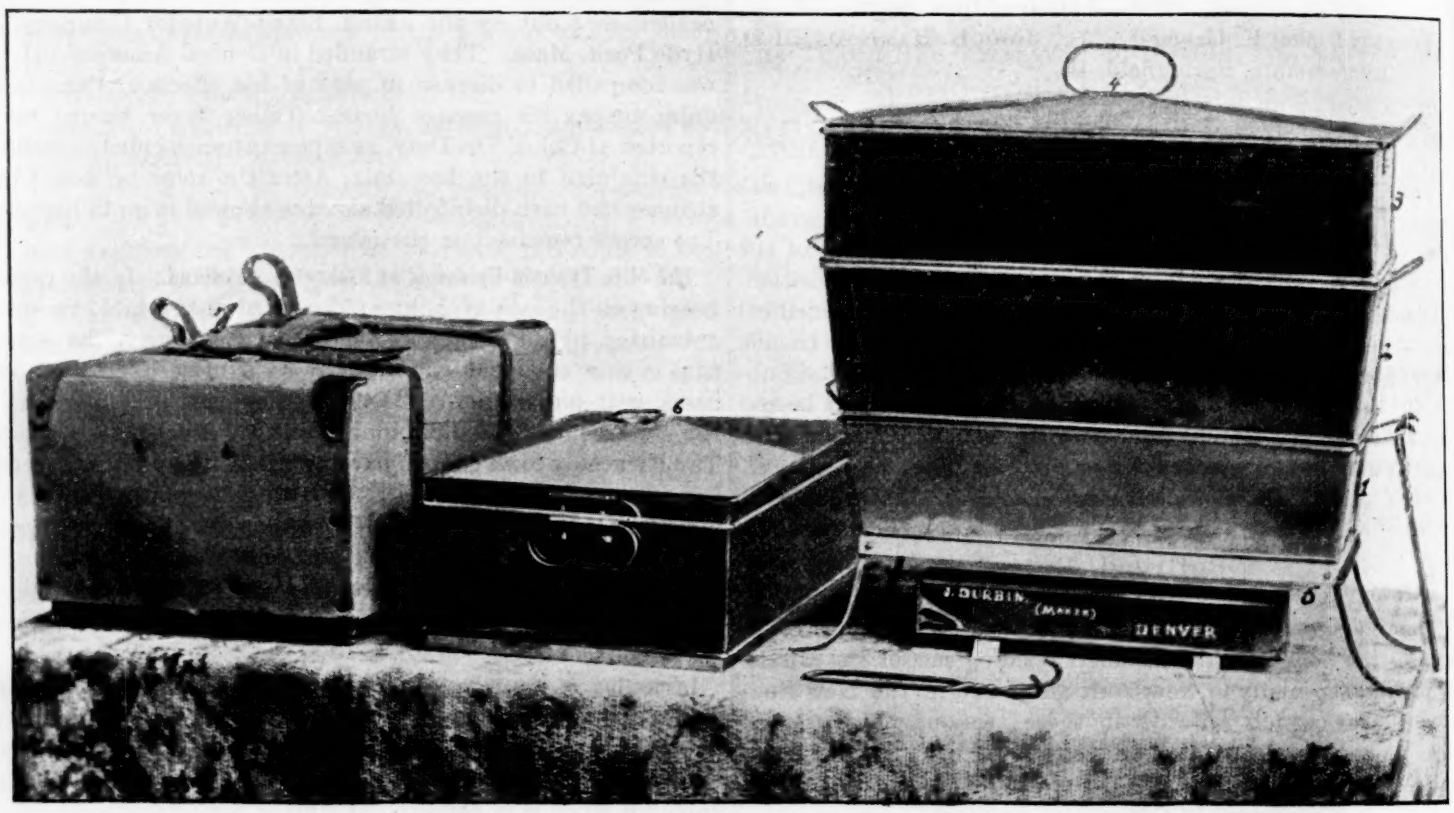
In the *University Medical Magazine* for August, 1896, I described "A Compact Portable Sterilizer for Surgical Instruments and Dressings." The use of this sterilizer for some months has led to alterations and improvements which make it much more satisfactory than the original instrument. The illustration shows its present form when set up for use, as well as when ready for packing.

For practical sterilization this instrument has given perfect satisfaction; it is light, portable in small space, yet when fully extended, ample for all instruments, dressings, towels, operating coats, etc., one needs in ordinary operative work.

The instruments are boiled in a soda solution (1 per cent.) in the lower pan, the steam rising through the perforated bottom of the second pan to sterilize the dressings which have been placed in it. The top section has no bottom, being simply a collar for increasing the size of the steam chamber when much space is needed, and may be left off if desired, as the cover fits either section.

There is no difficulty in bringing the instruments to the required degree of heat, nor in sustaining for any required time the temperature of boiling water in the steam chamber.

The lamp is an open one for the combustion of alcohol, its flame will boil three pints of water in the instrument pan in four minutes. A plate, waiter, or instrument tray with a little water in it should be placed under the stand and lamp for the lamp to rest in; this is to prevent the burning of the table by the reflected heat of the lamp, and the occurrence of fire from the boiling over of the alcohol in the lamp if by any oversight it has been overfilled. A light folding frame is provided for the sterilizer to rest upon when the lamp is used; of course when other sources of heat are at hand, it and the lamp may be dispensed with.



1, instrument pan. 2, steam chamber for dressings, etc.; bottom perforated. 3, section for increasing size of steam chamber; has no bottom. 4, lid for steam chamber; fits 2 or 3. 5, lamp and stand. 6, sterilizer "nested" for packing in carrier. 7, carrier; ample room for sterilizer and many other instruments.

The whole instrument knocks down in very small space for carrying about, and readily goes into an ordinary dress suit case, or a telescope bag 15 by 9 inches, 6 inches high, leaving plenty of room in the sterilizer, as well as in the bag about the sterilizer, for other articles.

As none of the joints of this sterilizer are dependent upon solder, it will endure any degree of heat short of that which will fuse the copper of which it is made; and if the heat is so regulated as to avoid scorching the dressings, the steam chamber may be taken off the water pan, and used as an oven, so drying and doubly sterilizing its contents.

The best features of this instrument as now designed are, its light weight, its knocking down into very small space for carrying about, its great capacity and efficiency, its simplicity, and best of all its small cost, as compared with other sterilizers.

ASSOCIATION NEWS.

Section on Practice of Medicine.—Program:

TUESDAY, JUNE 1ST.—AFTERNOON SESSION.

1. Address of Chairman. The Treatment of Dilatation of the Heart. John H. Musser, Philadelphia, Pa.
2. The "Schott Treatment" of Cardiac Disease. W. B. Camac, Baltimore, Md.
3. The Prognosis and Therapeutic Indications in Heart Disease. D. L. Rochester, Buffalo, N. Y.
4. A case of Anasarca with Apparent Chronic Nephritis and Dilated Heart, with recovery. F. Billings, Chicago, Ill.
5. Reduplication of Heart Sounds (by invitation). C. F. Hoover, Cleveland, Ohio.
6. The Use of Digitalin, with Reference to Dose. Henry Beates, Philadelphia, Pa.
7. True Angina Pectoris. T. L. Maddin, Nashville, Tenn.
8. The Prognosis and Therapy of Heart Disease in Childhood. Henry Koplik, New York, N. Y. Discussion opened by F. A. Packard, Philadelphia, Pa.
9. Report of a case of Chronic Recurrent Endocarditis; Mitral Insufficiency; Enlarged Liver; General Edema and Ascites; Returning Compensation. H. W. McLauthlin, Denver, Colo.
10. Gonorrheal Endocarditis. W. F. McNutt, San Francisco, Cal. Discussion to be opened by W. S. Thayer, Baltimore, Md.
11. Two Cases of Abdominal Aneurysm. James C. Wilson, Philadelphia, Pa.
12. Tracheal Tugging. Harry Toulmin, Philadelphia, Pa.
13. The Relation of Digestive Disturbances to Cardiac Disease. H. W. Rogers, Cleveland, Ohio.
14. The Relationship of Organic Disease of the Heart to Pulmonary Tuberculosis. G. W. Webster, Chicago.
15. The Diagnosis of Pericardial Effusion. A. O. J. Kelly, Philadelphia, Pa.
16. Hydrotherapeutics. S. C. James, Kansas City, Mo.
17. Internal Medicine a Specialty in Itself, and its Relation to the Recognized Specialties, Particularly to Bacteriology. G. B. Harrison, Washington, D. C.
18. The Physical Treatment of Chronic Cardiac Disease (in so-called Schott Method). H. N. Heineman, New York, N. Y.

Dinner of the Section at the Aldine Hotel at 7 P.M.

WEDNESDAY, JUNE 2D—MORNING SESSION.

19. Discussion on Sero-diagnosis in Typhoid Fever: *a*, Principles Underlying Sero-diagnosis, William H. Welch, Baltimore, Md.; *b*, Sero-diagnosis, Wyatt Johnston, Montreal, Canada; *c*, Clinical Report on Sero-diagnosis, R. C. Cabot, Boston, Mass.; *d*, Clinical Report on Sero-diagnosis, W. H. Bloch, Baltimore, Md.; *e*, The Serum Test for the Diagnosis of Typhoid Fever, H. M. Biggs, New York, N. Y.; *f*, Clinical Report on Sero-diagnosis, S. S. Kneass, Philadelphia, Pa.; *g*, Clinical Report on Sero-diagnosis, J. H. Musser and John M. Swan, Philadelphia, Pa.
20. Elsner Method of Diagnosis in Typhoid Fever, Mark W. Richardson, Boston, Mass.
21. Observations on Two Examples of Typhoid Meningeal Infection (by invitation). A. P. Ohlmacher, Cleveland, Ohio.
22. Relapses in Typhoid Fever. Wm. Osler, Baltimore, Md.
23. Differential Diagnosis of the Continued Fevers. J. A. Witherspoon, Nashville, Tenn.
24. Diet in Typhoid Fever. F. C. Shattuck, Boston, Mass.
25. Statistics in Hemorrhagic Typhoid Fever. R. G. Curtin, Philadelphia, Pa.
26. Perichondritis of the Larynx in Typhoid Fever, with Specimens and Photographs; Photographs of Intra-uterine Amputation and one of Elephantiasis. M. H. Fussel, Philadelphia, Pa.
27. Typhoid Fever. J. E. Woodbridge, Cleveland, Ohio.
28. The Rational Antiseptic Treatment of Typhoid Fever. H. O. West, Galveston, Texas.
29. The Treatment of Typhoid Fever. J. N. Upshur, Richmond, Va.
30. One Hundred Cases of Typhoid Fever. H. G. McCormick, Williamsport, Pa.
31. A Plea for Intestinal Antisepsis in the Treatment of Typhoid Fever in Conjunction with the Brand and other Methods of Treatment. Joseph Leidy, Philadelphia, Pa.

WEDNESDAY, JUNE 2D—AFTERNOON SESSION.

32. The Diagnosis of Leprosy. James C. Wilson, Philadelphia, Pa.
33. Hydrophobia. C. W. Dulles, Philadelphia, Pa.
34. The Clinical Symptoms, Bacteriologic Findings and Post-mortem Appearances in cases of Infection of Human Beings with the Bacillus Pyocyaneus. L. Barker, Baltimore, Md.
35. Some Observations on Grippe. J. Sharp, Kansas City, Mo.
36. Trichinosis and the Trichina Spiralis. F. A. Packard, Philadelphia, Pa.
37. Notes on an Epidemic of Cerebro-spinal Meningitis. H. A. Moody, Mobile, Ala. Discussion to be opened by Simon Flexner, Baltimore, Md.
38. The Diagnosis and Prophylaxis of Scarlet Fever. E. Foster, Augusta, Ga.
39. Myxedema, with Report of Two Cases. J. M. Anders, Philadelphia, Pa.
40. Report of a Case of Raynaud's Disease. G. A. Fackler, Cincinnati, Ohio.
41. The Treatment of Exophthalmic Goitre and other Vasomotor Ataxias with Preparations of the Thymus Gland and of the Adrenals. Solomon Solis-Cohen, Philadelphia, Pa.
42. Light Headaches. J. K. Mitchell, Philadelphia, Pa.
43. A Reliable and Harmless Way to Diminish and Cure Over-fatness. W. T. Cathell, Baltimore, Md.
44. The Importance of the Habit of Prognosis to the Development of the Individual Physician. Louis F. Bishop, New York, N. Y.
45. Plasmodium of Malaria, Illustrated by Lantern Slides. Judson Daland, Philadelphia, Pa.

THURSDAY, JUNE 3D—MORNING SESSION.

46. Some of the Clinical Uses of the X-Rays in Medicine. P. H. Williams, Boston, Mass.
47. The Application of the Roentgen Rays to Medical Diagnosis. C. L. Leonard, Philadelphia, Pa.
48. Miliary Tuberculosis. J. T. Whittaker, Cincinnati, Ohio.
49. Tuberculosis Antitoxin. Prof. E. A. de Schweinitz, Bio-Chemical Laboratory, Department of Agriculture, U. S.
50. Anti-tuberculin. J. McFarland, Philadelphia, Pa.
51. A Report on Treatment of Tuberculosis. D. L. Rochester, Buffalo, N. Y. Discussion to be opened by S. Solis-Cohn, Philadelphia, Pa.
52. Oxytuberculin in Tuberculosis. J. O. Hirschfelder, San Francisco, Cal.
53. A Further Report on the Treatment of Tuberculosis by Iodoform Inunctions (by invitation). L. F. Flick, Philadelphia, Pa.
54. Curability of Pulmonary Tuberculosis. E. B. Borland, Pittsburg, Pa.
55. Title not given. Paul Paquin, St. Louis, Mo.
56. Some Deformities of the Chest in the Light of its Ancestry and Development. Woods Hutchinson, Buffalo, N. Y.
57. A Study of Certain Physical Signs of Disease of the Chest. J. N. Hall, Denver, Colo.
58. Pneumonia; its Etiology, Pathology and Inferential Treatment. A. A. Young, Newark, N. Y.
59. Management and Treatment of Malignant Types of Croupous Pneumonia. D. S. Campbell, Detroit, Mich.
60. The Hot Bath in the Treatment of Pneumonia. J. Eichberg, Cincinnati, Ohio. Discussion to be opened by J. P. C. Griffith, Philadelphia, Pa.
61. Cheyne-Stokes Respiration. N. S. Davis, Jr., Chicago.
62. Multiple Neuritis in Influenza. H. B. Allyn, Philadelphia, Pa.

THURSDAY, JUNE 3D—AFTERNOON SESSION.

Meeting at Houston Hall, University of Pennsylvania, 34th and Spruce Streets.

63. Discussion of Anemia, its Causes, Pathology and Treatment. *a*, The Nature and Varieties of Anemia, Alfred Stengel, Philadelphia, Pa.; *b*, The Relation of Infection to Anemia, A. C. Abbott, Philadelphia, Pa.; *c*, The Alterations in the Blood and Methods of Determination, A. E. Taylor, Philadelphia, Pa.; *d*, The Salivary and Gastric Functions, S. M. Hamill and D. L. Edsall, Philadelphia, Pa.; *e*, The Nervous System in Anemia, Joseph Sailer, Philadelphia, Pa.; *f*, The Spinal Cord in Pernicious Anemia, C. W. Burr, Philadelphia, Pa.; *g*, Disorders of the Organs of Special Sense in Anemia, Wm. Campbell Posey, Philadelphia, Pa.; *h*, The Treatment of Anemia, William Pepper, Philadelphia, Pa.; *i*, The Hydriatic Treatment of Anemia, Simon Baruch, New York, N. Y.

Discussion continued by W. S. Thayer, Baltimore, Md.; R. C. Cabot, Boston, Mass.: J. S. Herrick, Chicago, Ill.

64. A Consideration of the Pathology of Unusual Forms of Hokgkin's Disease (Lymphosarcomotosis). Simon Flexner, Baltimore, Md.
65. Leukemia. F. W. Thomas, Marion, Ohio.
66. A Case of Acute Lymphatic Leukemia with Streptococcus Infection. J. B. Herrick, Chicago, Ill.

67. Lymphatic Leukemia, with Report of a Case. T. G. Ashton and A. H. Stewart, Philadelphia, Pa.

FRIDAY, JUNE 4TH—MORNING SESSION.

68. Discussion on Gout. To be opened by Woods Richardson, Buffalo, N. Y. *a*, The Gastro-intestinal and Hepatic Relations and Manifestations of Gout, Charles Stockton, Buffalo, N.Y.; *b*, The Cardio-Vascular and Renal Relations and Manifestations of Gout, N. S. Davis, Jr., Chicago, Ill.; *c*, The Naso-Pharyngeal and Pulmonary Manifestations of Gout, Harrison Allen, Philadelphia, Pa.; *d*, The Nervous System in Gout, Charles K. Mills, Philadelphia, Pa.; *e*, Special Senses, Charles A. Oliver, Philadelphia, Pa.; *f*, The Relation of the Alloxur Bodies to Gout, or a Uric Acid Diathesis, with Demonstration, T. B. Futcher, Baltimore, Md.; *g*, The Relation of Uric Acid to Neurasthenia, F. S. Pearce, Philadelphia, Pa.; *h*, The Cutaneous Manifestations of Gout, John V. Shoemaker, Philadelphia, Pa.; *i*, The Treatment of Gout, H. C. Wood, Philadelphia, Pa.

Discussion continued by J. I. Whittaker, Cincinnati, Ohio; J. B. Marvin, Louisville, Ky.; William Osler, Baltimore, Md.; Wm. E. Hughes, Philadelphia, Pa.

69. Some Remarks upon the Uric Acid Diathesis and its Treatment. Charles F. Craig, Danbury, Conn.

70. Rheumatoid Arthritis. David Riesman, Philadelphia, Pa.

71. A Further Report on Tachochymia (Dilatation of the Stomach). Max Einhorn, New York, N. Y.

72. On the Local Treatment of Diseases of the Stomach, with Special Reference to the Employment of Silver, Alumnol, Ichthyol and Bismuth; Description of Newer Apparatus for the use of the same. D. D. Stewart, Philadelphia, Pa.

73. A Remarkable Case of Gastroxynsis, with Symptoms Simulating Hepatic Colic. D. D. Stewart, Philadelphia, Pa.

74. As to the Utility of a Knowledge of the Percentage of Hydrochloric Acid in the Stomach Contents, and the Practical Value of Certain Commonly Employed Methods for its Estimation. D. D. Stewart and Henry Leffmann, Philadelphia, Pa.

75. Gastroptosis. Charles D. Aaron, Detroit, Mich.

76. Relation of Fat Necrosis and the Pancreas. H. U. Williams, Buffalo, N. Y. Discussion to be opened by W. L. Coplin, Philadelphia, Pa.

77. The Diagnosis of Abdominal Effusion and Growths. James Tyson, Philadelphia, Pa.

78. Clinical Aspects of Jaundice, with Illustrative Cases. T. S. Latimer, Baltimore, Md.

79. Chronic Inflammation and Ulceration of the Duodenum, with Resultant Reflexes. J. M. Allen, Kansas City, Mo. Discussion to be opened by Boardman Reed, Philadelphia, Pa.

80. Cirrhosis of the Liver. J. B. Marvin, Louisville, Ky.

81. A New Test for Lactic Acid. J. P. Arnold, Philadelphia, Pa.

FRIDAY, JUNE 4TH—AFTERNOON SESSION.

82. Conclusions from a Year's Examination of Urine. J. A. Scott, Philadelphia, Pa.

83. Nephritis without Albuminuria. A. R. Edwards, Chicago, Ill.

84. The Curability of Bright's Disease. Elmer Lee, Chicago, Ill.

85. Demonstration of Diabetic Blood and Urine Tests. Ludwig Bremer, St. Louis, Mo.

86. The Treatment of Diabetes. F. P. Norbury, Jacksonville, Ill. Discussion to be opened by James Tyson, Philadelphia, Pa.

87. Case of Primary Renal Tuberculosis. J. D. Steele, Philadelphia, Pa.

88. The Medical Treatment of Appendicitis. W. F. McNutt, San Francisco, Cal.

89. The Treatment of Cancer by Zinc Mercuric Cataphoresis. C. B. Massey, Philadelphia, Pa.

90. Experience in the Treatment of Epilepsy According to the Method Suggested by Niemeyer. Matthew Woods, Philadelphia, Pa.

91. Medicine as an Exact Science. W. J. K. Kline, Washington, D. C.

92. Eighteen Years of Observation of Pulmonary Tuberculosis in Asheville, N. C. J. H. Williams, Asheville, N. C.

93. To What Extent are the Symptoms of Disease as Usually Treated Conservative. W. C. Spalding, New York, N. Y.

Section on Materia Medica, Pharmacy and Therapeutics.—Program.

TUESDAY, JUNE 1ST.

1. Address of Welcome to the Delegates from the American Pharmaceutical Association.

2. Chairman's Address. Warren B. Hill, Milwaukee, Wis.

WEDNESDAY, JUNE 2D.

3. Discussion of Subjects Referred to the Section on Materia Medica, Pharmacy and Therapeutics, by the American Pharmaceutical Association.

4. On the Therapeutical Properties of Alcohol and the Reasons Why None of the Fermented and Distilled Liquors Used as Beverages Should be Recognized in the U. S. Pharmacopeia as Medicinal Agents. N. S. Davis, Chicago, Ill. Discussion, Paul Paquin, St. Louis, Mo.

5. Dismissal from the U. S. Pharmacopeia of Spiritus Frumenti, Spiritus Vini Gallici, Vinum Album, Vinum Rubrum. Replacement of official wines by vinegars. Dismissal of all tinctures having a fluid extract of the same drug official. Substitution for such tinctures and fluid extracts, a 50 per cent. tincture under a distinctive title. Change of formula for Dover's Powder back to that of the 1890 U. S. Pharmacopeia by using potassium sulphate in place of sugar of milk. Discussion, H. C. Wood, Philadelphia, Pa.

6. Patent Medicines and Our Patent Laws. F. E. Stewart, Detroit, Mich.

THURSDAY, JUNE 3D.

7. Report of the Committee on Joint Investigation. Strophanthus. *a*. Comparative Investigation of the Varieties of Commercial Strophanthus. Smith Ely Jelliffe, New York City, N. Y. *b*. Composition. Alfred R. Dohme, Baltimore, Md. *c*. Physiologic and Therapeutic Action; a Clinical Study. R. W. Wilcox, New York City, N. Y.; *d*. The Pharmacology of Strophanthus. E. M. Houghton, Detroit, Mich.

Constituents of Viburnum Barks. Professor Coblentz.

Guaiacol Valerianate and Creosote Valerianate. Frank Woodbury, Philadelphia.

Carvacrol Iodid. A. H. Cohn, Milwaukee, Wis.

The Experimental Basis of the Dietetic and Medicinal Treatment of Hyperacidity and Gastritis. J. C. Hemmeter, Baltimore, Md.

FRIDAY, JUNE 4TH.

8. Nuclein Solution; a Clinical Study. Oscar R. Tomlinson, Mt. Vernon, N. Y.

9. The Effects of Serum and Special Antitoxins in Pure and Mixed Cases of Tuberculosis. Paul Paquin, St. Louis, Mo.

10. Anti-streptococcic Serum; a Clinical Report. Harold Sorby, Chicago, Ill.

11. The Serum Therapy of Tetanus. A. F. Lemke, Hospital, Ill.

12. Thyroid Extracts. W. H. Neilson, Milwaukee, Wis.

13. Treatment of Mental States by Toxins. O. A. King, Lake Geneva, Wis.

14. Practical Difficulties of Psycho-therapeutics. G. V. I. Brown, Duluth, Minn.

SOCIETY NEWS.

Ninth International Congress of Hygiene and Dermography, which was to have opened in Madrid next October has been postponed until April, as the Spanish Government is otherwise occupied at present.

St. Louis Medical Society held a regular meeting April 17. Papers were read by T. F. Prewitt, on "Resection of both Hip-Joints for Tuberculosis," and J. B. Ross, on Pathologico-Histological Notes on Mastitis Glandularis Cystica (Reclus) and Mastitis Diffusa Nodosa (Phocas).

American Medical Editors.—The following has been written to the Editors:

My Dear Doctor: At a meeting of the Committee of Arrangements it was decided that the next Dinner of the American Medical Editors' Association shall take place in Philadelphia, at the Aldine Hotel, on Tuesday, June 1st, at 8:30 P.M. It is confidently expected that this will be a most enjoyable and successful occasion. We write, therefore, to ask if you will inform the Chairman by return mail if we may expect you to be present, and also if you will include the names of any friends that you may desire to invite. The subscription will be $5 per plate including wine. It is earnestly desired that you will give this matter immediate attention so that all arrangements may be completed.

The annual meeting will be held at the Aldine Hotel at 7 P.M.

Yours sincerely, JUDSON DALAND, Chairman,
319 S. 18th Street, Philadelphia.

H. A. HARE, President of the Association.

Second International Congress of Railroad and Maritime Sanitation and Hygiene, convenes at Brussels next September, to discuss questions of great practical importance to the profession and to the public, and incidentally to lead to a better appreciation by the public and the administrations of railroads, etc., of the immense services rendered by the profession. We note among the addresses to be delivered: "Should the medical service form a part of the administration, or should it be connected with the employes' organizations? Quantitative determination of the chromatic sense. Simulation of optic and aural disorders. Accident service, etc." For further details see *Gaz. Med. de Liége*, March 4, or apply to Dr. De Lantsheere, rue de l'Association 50, Brussels.

The Eighteenth Balneologic Congress met at Berlin in March. Neisser spoke of "Balneotherapeutics in Syphilis," stating that he considers mercury the only certain remedy for this disease; it acts directly upon the specific virus and diminishes the dangers of heredity. Iodin is ineffectual in the early stages and is only adapted for tertiary phenomena. There is no mineral water that can take the place of the mercury, and some, like sulphur waters, directly counteract its effect, as they form in combination with it an insoluble mercurial sulphid. But in some cases of intolerance of mercurial frictions, electric sublimate baths can be advantageously combined with it. Mineral waters, on the whole, favor mercurial treatment as they promote general metabolism. The effect of the mercury is also enhanced when it is more rapidly eliminated from the organism and more frequently renewed, than when it is stagnating in it. In every case saline waters and "drink cures" can be recommended. He prefers injections to inunctions and urged that every physician should be familiar with the treatment of syphilis, as he disapproves of the idea of specialists for this disease. Winternitz of Vienna stated he had never treated a case of Basedow's disease with hydrotherapeutics that had not been very much benefited by it. Cold applications at the back of the neck always improved the cardiac action, and temporarily arrested the tremor. Similarly favorable results were obtained by packs and compresses in reducing the hypertrophy of the gland, and the sweats. But the chief benefits of hydriatic treatment are felt in the metabolism and the disturbed functions of the organism. Hydrotherapy in this disease must go hand in hand with a strictly regulated diet. He has entirely cured the severe attendant diarrhea with milk.

We notice that in one of the discussions a member observed that: "Sleeplessness is always an indication of commencing paralysis." Eulenburg of Berlin proclaimed anew the advantages of "Motion Therapeutics" in cerebral and spinal diseases, and described various cases in which marvelous benefits had been derived.

BOOK NOTICES.

Transactions of the American Association of Obstetricians and Gynecologists, Vol. ix. For the year 1896. Philadelphia: Wm. J. Dornan, 1897.

We have already given an abstract of the proceedings of this flourishing society (JOURNAL, Oct. 10, 1896, p. 811) and it only remains to congratulate the Publication Committee upon the handsome setting they have given the papers and the high grade of work the society is doing.

An excellent biographic sketch of the late Hiram Corson by Dr. Thraill Green of Easton concludes the volume.

Forty-three members attended the meeting which was held at Richmond, Va., under the presidency of our colleague, Joseph Price. The next annual meeting will be held at Niagara Falls, N. Y., Aug. 17–20, 1897.

Transactions of the Eighteenth Annual Meeting of the American Laryngological Association, 1896; pp. 303. New York: D. Appleton & Co. 1897.

This meeting was held in Pittsburg, May 14, 15 and 16, 1896, under the presidency of our colleague, Dr. W. H. Daly. Forty Fellows were present. Brief obituary notices of Professor Wilhelm Meyer of Copenhagen and Wm. Chapman Jarvis of New York are included in the minutes of the meeting.

The papers are of a high standard and several of them would find an appropriate place in a work on general surgery. The papers on Sarcoma of the Nasal Chambers by Dr. A. A. Bliss of Philadelphia, on Naso-pharyngeal "fibroid" Tumor by E. F. Ingals, Chicago, and on Deviation of the Nasal Septum by Dr. Jno. O. Roe, are of interest to general surgeons as well as to the laryngologists.

The volume is well printed and the illustrations unusually good.

Sixth Annual Proceedings of the Association of Military Surgeons of the United States, held at Philadelphia, May 12, 13 and 14, 1896. Pp. 442. Cleveland: Medical Gazette Publishing Co. 1896.

This handsome volume contains, besides the minutes of the meeting, the addresses and papers presented. All of which are interesting and some of them of enduring value. The original papers in the volume are by Col. C. H. Alden, U. S. A.; Major D. A. Kuyk, Va. Vol. Inf'y.; Capt. J. J. Erwin, O. N. G.; Capt. J. E. Pilcher, U. S. A.; Major Geo. W. Adair, U. S. A.; Lieut.-Col. W. H. Forwood, U. S. A.; Col. Dallas Bache, U. S. A.; Lieut. H. R. Stiles, U. S. A.; Major Valery Havard, U. S. N.; Major Jno. Van R. Hoff, U. S. A.; Commander Jno. C. Wise, U. S. N.; Capt. Myles Standish, Mass. Vol. M.; Capt. J. M. Banister, U. S. A.; Major P. F. Harvey, U. S. A.; Major Paul R. Brown, U. S. A.; Lieut. H. G. Beyer, U. S. N.; Lieut. H. L. Chase, Mass. V. M.; Capt. C. E. Woodruff, U. S. A.; Capt. Louis La Garde, U. S. A.; Lieut. Thos. C. Craig, U. S. N.; Major C. C. Foster, Mass. V. M.; Major D. M. Appel, U. S. A.; Lieut. H. A. Arnold, Penn. N. G. This volume will go into the library as a valuable addition to the literature of military surgery. The next meeting will be held in Columbus, Ohio, May 25, 26 and 27.

First Aid in Illness and Injury. By Capt. JAMES E. PILCHER, M.D., U. S. A. Pp. 322. Fourth edition; 12mo ($2 net). New York: Chas. Scribner's Sons. 1897.

This book has been regarded with much favor by those engaged in "first aid" work, and by the medical officers of the National Guard. It contains a great deal of elementary information in anatomy and physiology, and has also embodied in it the recent regulations for the drill of the hospital corps of the army. The language of the author is well chosen and his teachings are sound. There are few books of this class that are superior for the purposes and uses of the national guardsman.

International Clinics. A quarterly of clinical lectures on medicine, neurology, surgery, gynecology, etc., and specially prepared articles on treatment, by professors and lecturers in the leading medical colleges of the United States, Germany, Austria, Great Britain and Canada. Edited by JUDSON DALAND, M.D., Philadelphia; J. MITCHELL BRUCE, M.D., F.R.C.P., London, and DAVID W. FINLAY, M.D., F.R.C.P., Aberdeen, Scotland. Vol. i. Seventh series. 1897. Pp. 352. Philadelphia: J. B. Lippincott & Co.

There are forty-five clinical lectures in this volume representing a wide range of cases, and they represent the views of gentlemen having at their disposal a vast amount of material; the result is that a volume is produced of the highest practical value. General practitioners desiring to keep pace with modern views of treatment, in many cases far in advance of those promulgated in the text books. The publishers have done their work well.

Saint Thomas Hospital Reports. New series. Edited by Dr. T. D. ACLAND and Mr. BERNARD PITTS. London: J. & A. Churchill. 1897.

Hospital reports are always welcome because they seem to bring us face to face with the actual treatment of disease, and to practitioners they have perennial freshness. The text-book and the monograph may be scientific but marvelously dull, but the hospital report has an ever present interest.

The contributors to this volume are F. R. Walters, W. W. Wagstaffe, H. H. Clutton, Robert Cory, Henry Betham Robinson, T. H. Kellock, F. F. Caiger, W. Wellington Lake,

Chas. R. Box, C. S. Wallace, W. H. Tate, Herberfly Toomes, A. H. P. Downey, E. C. Stabb, H. G. Turney.

The volume under consideration is fully equal to its predecessors.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. Edited by Dr. THOMAS L. STEDMAN. In twenty volumes. Vol. ix. Diseases of the Digestive Organs. Pp. 820. New York: William Wood & Co. 1897.

In many respects this volume will naturally be the most popular of the series on account of the subject. The contributors are C. A. Ewald, M.D., Berlin; Kendal Franks, M.D., Johannesburg, South Africa; V. P. Gibney, M.D., New York; Carlo Gioffredi of Naples; Werner Kummel, M.D., Breslau; Johann Mikulicz, M.D., Breslau; Jno. B. Murphy, M.D., Chicago; Mariano Semmola, Naples; Alfred Stengel, M.D., Philadelphia; Jno. B. Walker, M.D., New York.

The names of the authors insure high class work and the reader is not disappointed. The volume is profusely illustrated and uniform in style with its predecessors. The volume has made good its claim to fairly represent the medicine of the present day.

NECROLOGY.

FRANK ABBOTT, M.D., New York University Medical College, 1871, died suddenly of cardiac disease at his home in New York city April 20. He was born at Shapleigh, York County, Maine, Sept. 5, 1836, and was descended from one of the Puritan settlers in that part of the country. When twenty years old he became a student in the office of a dental surgeon in Oneida, and then removed to Johnstown, N. Y., where he practiced as a dentist until 1863, when he came to New York and finally after a medical course received the usual degree. Notwithstanding his membership in the New York Academy of Medicine and other medical associations, his bent was toward dentistry, and in that specialty he attained an enviable prominence. In 1866 upon the formation of the New York College of Dentistry he was appointed clinical instructor, then Professor of Operative Dentistry and Oral Surgery, and finally in 1869 the Dean of Faculty, a place which he held up to his death.

JAMES CALDWELL MORTLAND, M.D., at Edgerton, Ohio, April 20, 1897. He was born May 23, 1834. After studying a year in the medical department of the University of Michigan at Ann Arbor, he practiced his profession at Edgerton, Ohio, until the fall of 1870, when he entered the Bellevue Hospital Medical College of New York city, and was graduated March, 1871. Returning to Edgerton he resumed practice until his death. As a professional man he was upright, honest and faithful in his duties and obligations. He was free from any encroachment upon the rights of others. In the language of the school, his was a practice of which it might be said, There was no poaching there. As a citizen he was honored and respected and loved by all. He was a member of the AMERICAN MEDICAL ASSOCIATION.

Prof. NICOLAI VON ZDEKAUER, M.D., aged 82. The Nestor of Russian physicians in age and influence, Physician to the Court, president of numerous scientific societies, etc. There has not been a single medical, hygienic nor sanitary measure of importance adopted in Russia in the last half century that did not owe something to him. Son of a Vienna medical man established in Russia, he rose to the utmost eminence, and all unite in extolling his culture, affability and intellect. He was one of the first who took a course of lectures from Scoda in one of the Vienna prisons, in the then much ridiculed and abused art of percussion and auscultation. When he returned from a tour of inspection of foreign hospitals, etc., in 1857, his report led to a complete reformation of the systems of heating and ventilating in vogue in Russia, not only in hospitals, but in theaters, hotels, palaces, etc. His contributions to medical literature were numerous and important.

JAMES A. ETHRIDGE, M.D., a well-known physician of Macon, Ga., died March 14 from the effects of chloroform. Dr. Ethridge was about to undergo an operation for fistula, and almost at the first inhalation of the chloroform his pulse and respiration ceased, and every effort to resuscitate him failed. Upon a preliminary examination of Dr. Ethridge no contra-indication to the use of chloroform could be discovered by the physicians in attendance. Dr. Ethridge was about forty years of age, and had practiced his profession successfully in Macon for many years. He was a member of the Board of Health of Macon, visiting physician to the city hospital, and surgeon to the Georgia Southern and Florida Railroad.—*Atlanta Medical and Surgical Journal.*

ANDREW OTTERSON, M.D., New York University Medical Department, 1844, died April 14, in Brooklyn, N. Y., of which city he was a health commissioner for three terms. He was born Feb. 22, 1822, near Amsterdam, N. Y., and was the son of a Dutch Reformed clergyman. On the occasion of the fiftieth anniversary of his entrance into the medical profession the Kings County Medical Society of which he was an ex-president, tendered him a banquet whereat many notables were present. As a sanitarian his opinion was held in esteem.

Prof. CARL SATHERBERG, aged 84, was one of the pioneers in Swedish gymnastics. For thirty years chief of the Stockholm Orthopedic Institute and his orthopedic appliances were awarded prizes at numerous European expositions. Besides his fame as a physician, he made a name for himself as a writer and poet, and composed a number of songs that are still very popular in Sweden.

J. J. MARSTON, M.D., McGill University, Montreal, 1863, on April 17, was found in his office chair, dead from cardiac disease at his home in Cheyenne, Wyoming. He served as a surgeon under Sheridan and Custer in their stirring Indian campaigns. A son in Princeton University and a widow are his survivors.

WM. GOODENOUGH WHEELER, M.D., Geneva Medical College, New York, 1845, a native of Columbus, N. Y., died April 17, at Chelsea, Mass. During the civil war he was an examining surgeon for the United States forces. He had reached the age of 76 years.

Dr. MORVAN, France, in his 79th year. A scientific investigator, public-spirited citizen and able practitioner. Although located in an obscure corner of Bretagne his name is familiar by its connection with various affections, among them the analgesic paresis, known as Morvan's disease.

SHERMAN S. STREET, M.D., of Arkville, N. Y., died April 2, aged 94 years. After having been graduated in Vermont, he began practice at Roxbury, N. Y., about 1840, but during the anti-rent difficulties, removed to another part of the same county. He retired from practice only within a few years of his death.——L. H. Colladon, M.D., Geneva, Switzerland, aged 55.——Dr. Durozier, Paris, aged 71. Known as a writer on cardiac pathology.——John Wilson McLean, M.D., College of Physicians and Surgeons, New York, 1859, died at his home in Norwalk, Conn., April 19, in his 60th year.——Enos L. Brooke, M.D., Pennsylvania Medical College (now extinct) 1848, died April 9, from accidental burns at West Pikeland, Chester County, Pa. He was in his 80th year.——Leroy McLean, M.D., Albany Medical College, New York, 1855, died at Troy, N. Y., April 23, in his 67th year.

MISCELLANY.

Professor v. Esmarch has been honored in many ways on the occasion of his silver wedding celebrated in February at Kiel, where in his 75th year he is still teaching with undiminished energy and popularity. His wife is the geborene Princessin Henriette zu Schleswig-Holstein-Sonderburg-Augustenburg, and aunt of the German Empress.

Osteomalacia.—Meslay reviews the literature on this subject and dismisses medical treatment as ineffective, while with surgical treatment success has been definitely and permanently secured in 80 per cent. of the cases treated. Porro who first applied surgical treatment to this disease, now has a record of 56 cases with 32 successes, 24 failures, and 70 double castrations resulting in 58 cures and 12 failures.—*Gaz. Méd. de Paris*, March 27.

The Generosity of Madame Charcot.—The widow of the late Professor Charcot has resigned the annual pension of 2,000 francs which she received from the state in favor of other widows and children of professors or *agrégés* of the Faculty of

Medicine of Paris who have died without leaving provision for their survivors. Madame Charcot has refunded all the money she has received from the pension since the death of her husband.

The Great Emerson on the Horse-chestnut.—A pleasantry recorded of Ralph Waldo Emerson is a story he told of a friend who carried a horse-chestnut as a talisman or protection against rheumatism. "He has never had it since he began to carry it; and indeed, it appears to have had a retrospective operation, for he never had it before."

Care Required From Old Person.—The supreme court of Nebraka holds, in Village of Culbertson v. Holliday, Jan. 7, 1897, that the law does not require of an old person the exercise of greater care to avoid injury than it requires of a young and vigorous one. It requires of each the exercise of ordinary care. It requires of neither the exercise of extraordinary care.

New Attempts in Sero-therapeutics of Infective Diseases.—Weissbecker has continued his experiments with children in pneumonia, typhoid or scarlet fever, making one injection in each case of 10 c.c. of serum from the blood of patients convalescing from the same disease. The effect varied in different cases, but all experienced immediate and permanent euphoria, and were able to eat afterward with continuous good appetite. The injection also materially shortened the duration of the disease in some of the cases.—*Semaine Méd.*, March 24.

A Medical Man's Valuable Collection of Chinese Works.—The late Dr. Lockhart, the first medical missionary sent to China by the London Missionary Society, presented to the society before his death a remarkable collection of Chinese books and works relating to China and neighboring countries, in ten European and fifteen Oriental languages. The London *Times* says that at a special meeting, held in the Mission Hall a fortnight ago, the Rev. R. Wardlaw Thompson, foreign secretary of the society, stated that a catalogue, which the Rev. Goodeve Mabbs had just completed in three large volumes, showed the library to consist of 2,600 bound works and an enormous number of pamphlets. Dr. Lockhart had spent £1,000 on the books; the present value of the collection was much higher. The collection included works not to be found in the British Museum and was without a rival in the world.

Elements of Damage.—Disfigurement, the supreme court of Iowa holds, Dec. 12, 1896, in Newbury v. Getchell & Martin Lumber and Mfg. Co., is a proper element of damage to be considered in personal injury cases. And such is said to be the general rule. But the court holds that a minor can not recover the cost of medical attendance; not, at least, until he has paid the bill. The explanation given is that the father, or, in the event of his death, the mother, is primarily liable for the bill, and, in the absence of proof to the contrary, it must be assumed that it is charged to him or her. If so charged, the minor can not recover for it. If not so charged, until it is paid, the liability is still, as stated, primarily that of the father or mother, and it must be presumed that he or she will meet the obligation.

Turkish Hospital Service on the Greek Frontier.—That the Turkish soldier is a formidable fighter has been long known, but it will be a matter of surprise to most people to learn from the military correspondent of the *Times* that Turkish organization has made rapid strides during the last few years, especially in the matter of military railways and hospitals. Writing from Salonika with Edhem Pasha's force, the correspondent refers to the creditable state of the medical service. He says: "The main hospital here is as good as many in Europe and has a large reserve supply of beds and medicines; the doctors are properly trained and the ambulances well equipped and officered. A very reasonable order has just relegated all the Christian military surgeons to the depots, while the fighting line is to be supplied with Mahommedans only. A little dysentery is the only disease from which the entire army of occupation, more than half of which has been brought from the distant provinces of Anatolia, has suffered."

"Sound Health."—"Sound health," as used with reference to an application for life insurance, the supreme court of Wisconsin says, in the case of Boyle v. Northwestern Mutual Relief Association, Feb. 23, 1897, has been defined to mean a state of health free from any disease or ailment that affects the general soundness and healthfulness of the system seriously. The word "serious," it adds, is not generally used to signify dangerous, but rather to define a grave, important or weighty trouble.

Non-essential Experience of Expert.—Where there is no apparent connection between the experience acquired by a physician in a certain capacity and his qualification as an expert in a given case, the appellate term of the supreme court of New York holds, in Brown v. Third Ave. Co., Feb. 26, 1897, that it is not error to exclude questions relative to such experience, when he is being qualified as a medical expert in such case. To illustrate, the court holds that it is not error to rule out questions regarding the duties of the witness as a member of a board of health where there is nothing to show that the duties of a member of a board of health would give the testimony of the witness greater value in the case.

Successful Laparotomy in the First Hour of Life.—Professor Bayer recently performed a radical operation on a newborn infant with a very large umbilical hernia, rupture of the sac, and eventration of almost the entire large and small intestines. He enlarged the mouth of the sac, replaced the intestines, excised the hernial sac, and closed the wound, using 20 grams pure chloroform, which was well tolerated. Recovery was prompt and uneventful. The choice between Breuss' percutaneous ligature, Olshausen's extraperitoneal method and the customary laparotomy with excision of the sac and suture of the mouth, is in favor of the latter, which is the best and most reliable in cases like the above. There are thirty-three cases on record with twenty-six recoveries; the present is the third on record performed during the first hour after birth, and the first in which there was rupture of the sac, which is an unconditional indication therefore for laparotomy in umbilical hernia.—*Cbl. f. Chir.*, April 3, from *Prager Med. Woch.*, No. 31, 1896.

The Treatment of Fractures by Massage.—From a careful consideration of the subject Woolsey (*Medical News*, March 20, 1897, p. 353) expresses the opinion that the treatment of fractures, especially occurring near joints, by immobilization, whether ambulatory or not, leaves something to be desired in, *a*, the time required; and *b*, the functional result obtained. The treatment of such fractures by massage and passive motion shortens the time required for bony union by one-third or one-half, and vastly improves the immediate functional result. This mode of treatment is especially applicable and important for fractures near joints. Its application is easy. It relieves pain and swelling, hastens callus formation and solidification, and prevents atrophy of muscles and stiffness of joints and tendons. Splints should be applied in the intervals between the daily applications for fifteen or twenty minutes of massage for the first ten or twenty days, according to the nature of the fracture and the tendency to displacement, or until consolidation occurs. This treatment, in conjunction with the ambulatory plan, promises an ideal method. Oblique fractures of both bones or of the only bone of a limb or fractures near the middle of the limb, with a tendency to displacement, should be immobilized until consolidation has begun to take place. Ambulatory treatment is indicated for the latter class of fractures, for fractures of the lower extremities in the alcoholic or the very aged, and for fractures of the neck of the femur in the aged. The plan of immobilizing the limb for a short time

in the best possible position, and then applying massage and passive motion, promises equally good results and especially adapts the method to private practice, in which it is particularly indicated on account of the shortened time required for union and the excellent functional results.

The Hospitals of London in Howard's Time.—The *Scalpel* quotes from "An Account of Lazarettos" by John Howard, some of the defects that existed in some of the London Hospitals, only a little more than a hundred years ago. The time of the publication of this book was 1789. Of Guy's Hospital he says: "That the wards in this hospital are in general too low. In the old wards the beds and testers are of wood and infested with bugs. In all the hospitals the beds are old and crowded against the walls. . . . I am fully persuaded that very much depends upon the patients lying on clean beds. The beds must be very offensive from the succession of patients with the various disorders who lie on them." At the Westminster Hospital a sum was paid every year for the destruction of bugs. Upon this he observes: "If the annual sum paid in several hospitals for the destruction of bugs were expended in airing, beating and brushing the beds, the end would perhaps be better answered. For in the country, where the air is fresh and freely admitted into lodging rooms, there were few or no bugs. In the hospitals in Sweden I observe a very good mode of sweetening the beds; on every fine day a certain number were brought into the open air and beaten and brushed on a deal machine made for the purpose. I could wish that such a practice were adopted in our hospitals, and that the rest of the bedding were more frequently washed and aired." At London Hospital, Whitechapel, he notes: "1, no cisterns for water, the vaults offensive; 2, the medical and chirurgical patients are together; 3, in a dirty room in the cellar there is a cold and hot bath which seems seldom to be used; 4, the wards had not been whitewashed for some years; 5, it has not within or without the appearance of neatness; 6, no vegetables are given to the patients." At Saint Bartholomew's he notes "that the wards being doubled have not the advantage of opposite windows." At the Middlesex Hospital he observes, "the rooms are damp and dirty." At St. Thomas's he tells us "there is no water closet."

Western Reserve University; A Four Years' Course. — In the College number of the JOURNAL the Medical College of the Western Reserve University, Cleveland, Ohio, was tabulated as requiring three years of attendance before graduation. We are pleased to announce that four years of study are required by this institution.

New York.

MONEY FOR THE HOUSE OF REFUGE.—During the present session of the State Legislature the Senate Finance Committee voted $32,700 to put the Refuge in good sanitary condition. There is a movement on foot to place the institution at once under the control of the State Board of Charities, who with more absolute power may manage with more satisfaction.

A MEDICAL COLLEGE BURNED.—A fire of unknown origin broke out at 3 A.M., April 23, in one of the buildings of the New York Infirmary for Women and Children, which in repairs alone will cause a loss of $20,000. The building in question was devoted to uses of the Woman's Medical College, but the main buildings in which the Infirmary is situated escaped. These were occupied by about one hundred nurses and patients, fifteen of the latter being children. There was no excitement and every precaution had been taken. An ample insurance will cover the loss on furniture, surgical and scientific instruments.

Hospitals.

The finance committee of the Evanston, Ill., Hospital Association has begun an active canvass for funds with which to erect a new hospital building. The estimated cost is $26,000. ——At the regular monthly meeting of the Mary Thompson Hospital for Women and Children, Chicago, Dr. Lucy Waite of Chicago was elected chief physician and surgeon of the hospital, to fill the vacancy caused by the resignation of Dr. Marie J. Mergler.——At the annual meeting of the board of directors of the Central State Hospital, Virginia, trustees, the following officers were elected: superintendent, Wm. F. Drewry, Petersburg; first assistant physician, R. C. Styll, Hollins Institute; second assistant physician, James R. Garlick, Richmond; third assistant physician, John M. Henderson, Southampton County. ——At the annual meeting of the Eastern State Hospital, Virginia, trustees, the former officers were re-elected.——The annual meeting of the directors of the Western State Hospital at Staunton, Va., was held April 15, and the officers were re-elected.

THE PUBLIC SERVICE.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from April 10 to 23, 1897.

Capt. Nathan S. Jarvis, Asst. Surgeon, is relieved from duty at Willet's Point, N. Y., to take effect on the expiration of his present leave of absence, and ordered to Ft. Huachuca, Ariz., instead of Ft. Clark, Texas, for duty.

Major John Van R. Hoff, Surgeon (Vancouver Bks., Washington), is granted leave of absence for one month, with permission to apply for an extension of one month.

First Lieut. George D. DeShon, Asst. Surgeon (Washington Bks., D. C.), leave of absence granted is still further extended to include May 1, 1897.

Capt. Edward C. Carter, Asst. Surgeon (Ft. Harrison, Mont.), is granted leave of absence for one month, with permission to apply for an extension of two months.

First Lieut. Carl R. Darnall, Asst. Surgeon, upon return of First Lieut. Frederick P. Reynolds, Asst. Surgeon, to Ft. McIntosh, will proceed to Ft. Ringgold, Texas, and report for temporary duty during the absence on leave of Capt. Walter D. McCaw, Asst. Surgeon.

First Lieut. Leigh A. Fuller, Asst. Surgeon, will proceed from Ft. Meade, S. Dak., to Ft. Harrison, Mont., and report for temporary duty at that post during the absence on leave of Capt. Edward C. Carter, Asst. Surgeon.

Capt. Ogden Rafferty, Asst. Surgeon, is granted leave of absence for three months, with permission to apply for an extension of one month, to take effect upon his relief from duty at Ft. Bliss, Texas.

Capt. James D. Glennan, Asst. Surgeon, is relieved from duty at Ft. Sill, Oklahoma Ter., and ordered to Ft. Clark, Texas, for duty, relieving Major Henry S. Kilbourne, Surgeon.

Capt. Walter D. McCaw, Asst. Surgeon, is granted leave of absence for one month, to take effect upon arrival at Ft. Ringgold, Texas, of First Lieut. Carl R. Darnall, Asst. Surgeon.

Lieut. Guy C. M. Godfrey, Asst. Surgeon, is ordered by the Secretary of War, as necessary for the public service, to proceed to St. Paul, Minn., and report in person to the commanding General, Dept. of Dakota, for temporary duty in that Department, and when his services shall no longer be required to return to his proper station at Ft. Sheridan, Ill.

Major Charles Smart, Surgeon, is ordered to proceed to Ft. Sill, Oklahoma Ter., at the proper time to accompany Troop E, First Cavalry, on a practice march, for the purpose of making a thorough test of the emergency ration recently established by the President, and when his services are no longer required with the command to return to his station in Washington, D. C.

PROMOTIONS.

First Lieuts. Francis A. Winter and William E. Purviance, Asst. Surgeons, to be Asst. Surgeons with the rank of Captain after five years service, March 9, 1897.

Change of Address.

Brown, M. M., from Chicago to Pipin, Wis.
Clausen, J. J., from Chicago to 1327 E. 8th St., Kansas City, Mo.
Dodd, Oscar, from Reliance Bldg. to 103 State St. (Columbus Mem. Bldg.), Chicago.
Danforth, I. N., from 903 W. Monroe St. to 758 Adams St., Chicago.
Edmunds, G. W. A., from 420 to 260 Webster Av., Chicago.
Farquhar, E. M., from Chicago to Early, Iowa.
Gardner, E. D., From Davison to Hancock, Mich.
Gihon, Albert L., from 8 W. 127th St. to Reform Club, 238 5th Av., New York, N. Y.
Hand, W. R., from Kensington to Elbow Lake, Minn.
Hummel, A. L., Adv. Agency, from 108 Fulton to 100 William St., New York, N. Y.
Haven, Jos., from 90 Warren Av. to 57 Gordon Terrace, Chicago.
Johnson, L. D., from 103 Dekalb St. to 819 W. Harrison St., Chicago.
Mattes, R. J., from 107 W. 5th St. to cor. Van Buren St. and Wayne Av., Dayton, Ohio.
Price, J. R., from 722 W. Division St. to 792 N. Washtenaw Av., Chicago.
Robinson, F. B., from Venetian to Reliance Bldg., Chicago.
Schurtz, R. E., from 566 Ogden Av. to 891 Sawyer Av., Chicago.
Senn, E. J., from 31 Washington St. to Room 406 100 State St., Chicago.
Sherman, W. P., from 12010 Stewart Av. to 707 W. 120th St., West Pullman, Chicago.
Seiler, C. from 1523 to 1719 Chestnut St., Philadelphia, Pa.
Weidner, Calvin, from Westford, Mass., to L. Box 274, Manchester, Conn.
Ziegler, Joseph, from 125 to 100 State St. ("The Reliance"), Chicago.

LETTERS RECEIVED.

Allen, J. M. (2), Liberty, Mo.; Asher, A. & Co., Berlin, Germany; Atkinson, Wm. B., Philadelphia, Pa.
Bruner, W. T., New Haven, Ky.; Bliss, C. N., Washington, D. C.; Bailey, Wm. Curtiss, Las Vegas Hot Springs, N. M.; Blakiston, P., Son & Co., Philadelphia, Pa.; Breedlove, J. W., Fort Smith, Ark.
Conner, P. S., Cincinnati, Ohio; Canfield, Wm. B., Baltimore, Md.; Caldwell, W. S., Freeport, Ill.
Dalton, M., Summerfield, Ill.; Divine, Chas. A., Ann Arbor, Mich.
Elliott, G. W., Richvalley, Ind.; Erwin, J. J., Cleveland, Ohio.
Fair, H. D., Red Key, Ind.; Fite, C. C., New York, N. Y.
Gaillard, D. L., Terrell, Texas; Gohm, J. P., Old Mines, Mo.; Gary, B. R.; Newport News, Va.
Hoffman, Adolph, Chicago; Hotel Walton, Philadelphia, Pa.; Hand, W. R., Elbow Lake, Minn.
Johnson, H. L. E., Washington, D. C.
Kansas City Medical College, Kansas City, Mo.; Klebs, A. C., Citronelle, Ala.
Lord & Thomas (2), Chicago.
McVey, W. E., Topeka, Kan.; Myers, F. C., Kalamazoo, Mich.; Moore, N. B., Springfield, Ark.
Northwestern University Medical School, Chicago.
Orendorff, Otis, Yates Center, Kan.
Paris, S. W., Louisville, Ky.
Reed, W. W., (2), Fowler, Colo.; Ravogli, A. (2), Cincinnati, Ohio.
Stephens, R. S., Dover, Del.; Sewall-Clapp Mfg. Co., Chicago; Scheppegrell, W., New Orleans, La.; Standard Mfg. Co., Waterloo, Iowa; Smith, Q. Cincinnatus, Austin, Texas; Schottler, G. J., Dexter, Minn.
Tucker, Willis G., Albany, N. Y.; Taylor, J. A., Montpelier, Ind.
Wood, H. L., Whitewater, Kan.
Xanten, F. A., St. Paul, Minn.
Zeit, F. Robert, Medford, Wis.